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ANNUAL REPORT

OF THE

AGRICULTURAL DEPARTMENT

FOR THE YEAR

1955

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ANNUAL REPORT OF THE AGRICULTURAL DEPARTMENT FOR THE YEAR 1955

PART I

POLICY

The objectives of agricultural policy remain unchanged; they are the achievement of maximum and optimum land use, and a progressively improving standard of living for the farming community.

2. Both are long term ideals in any country, but are more so in British Honduras, where agricultural development has for too long been neglected in relation to the more remunerative exploitation of its forest wealth.

3. Whilst forestry will always be of the greatest importance to this country, there is no reason why agriculture cannot play a far greater part in stabilising its economy, and contributing both to a higher degree of self-sufficiency and to the export of remunerative produce.

4. Yet because of the comparatively small population, widely scattered centres of production and varying soil and rainfall conditions which predominate, the problems of both improving and expanding production within economic limits are initially the more difficult.

5. For the many small farmers, who form the majority of the agricultural community, and whose economy is at present a difficult and precarious one—being particularly subject to the vagaries of the elements—the resolution of these problems is crucial.

6. To them, no doubt, the answers would seem simple; but unfortunately they are inevitably affected by numerous extraneous factors, including world markets, shipping, cold storage and processing facilities, the last of which tend to be expensive and impracticable unless production is on a large enough scale.

7. Nevertheless, once the better farming systems and most practicable crops have been determined, there is no reason why the small farmer's lot should not become more attractive and remunerative. The best pattern for development should, however, allow for a combination and close integration of small farmers with medium sized estate production, whence both can gain greater advantages.

8. Equally also, for insurance against both weather and market risks, it is advisable that development should not become overdependent on a one crop economy. In all areas farming should be mixed, even though the emphasis can still remain on one or two major crops.

9. It is vital that the planning and concentration of effort should be devoted to the successful achievement of these definite objectives; this is being done as rapidly as possible, yet inevitably, in the initial stages, disappointment and impatience can well arise, particularly amongst those for whom efficient marketing and credit facilities are an urgent need. Unless, however, the crops are successful and the worthwhile markets are available, all the other assistance will be to no purpose or premature.

10. The next phase of development can now very shortly be possible: —the planning and concentration of larger scale production in scheduled areas, for crops including sugar-cane, citrus, and cacao, limited though the first two are by international agreement; for livestock, and perhaps cotton and tobacco, and for the important local staple foods—rice, maize and beans.

11. As soon as this has been effected, the provision of adequate and essential marketing and other facilities can the more logically follow; but, at the same time also, a far greater number of producers will be required, if total production is to be economically competitive with other more populous countries.

12. On the first of January 1955 with the introduction of the Membership system, Agriculture was incorporated with the Forestry, Survey and other production Departments, under the Member for Natural Resources, the Honourable Leigh Richardson, and the Associate Member, the Honourable G. C. Price.

13. At the request of the Executive Council, a number of draft policy papers were submitted at the end of 1954; these covered proposed statements of policy for general agriculture, Agricultural Education, Livestock and Mechanisation.

WEATHER CONDITIONS

14. 1955 will inevitably go down to history coupled with the name of "Janet", the vicious hurricane which struck the Northern Districts on the night of September 27th—28th, after it had already done grievous damage in Barbados, Grenada and the Grenadines.

15. Even without "Janet", however, the weather would have been sufficiently difficult for farmers for 1955 to be remembered as a bad year. Yet anyone perfunctorily scanning the annual rainfall totals in the future might well consider that it had been a normal year; far from it.

16. Coming, as it did, directly following the wet year of 1954, when crops were poor because of the difficulty of obtaining a good burn, its many extreme vagaries were disastrous. For the first six months an intense "dry" rivalled that already notorious in 1949; besides delaying planting or necessitating several replantings for maize and early rice, this period saw some of the worst forest fires for many years. High temperatures, over 100°F at Baking Pot, ruled for weeks between April and June, and the "dry" was equally injurious to crops and stock.

17. The fires, resulting from numerous causes, in which the deliberate carelessness of man and the regrettable escapes from farmers' "milpas" unfortunately held high place, led to damage amongst perennial crops such as plantains, cassava and ground provisions; undoubtedly also, later, they contributed to the abnormal number of floods which occurred, particularly in the lower reaches of the Stann Creek, Sibun and Belize Rivers.

18. The rainfall figures for these first six months make interesting comparison both with the average and 1949:—

Central Farm	*January*	*February*	*March*	*April*	*May*	*June*	*Six mths. total*
1949 ..	2.90	0.44	0.96	0.13	0.00	3.32	7.75
1955 ..	1 83	2.65	0.85	0.00	0.02	4.10	9 45
1949-54 Average ..	2.71	1.14	1.17	1.33	3.96	7.68	17.99

19. Once the rains had broken in mid June, the rain came down in earnest and July produced 19.81 inches at Central Farm, nearly double the previous highest record for the month. August, for the first time in five years, produced the expected "Mauger" season dry, and totalled only 3.76 inches. September to November reverted to heavy rains, and thus the onset of an early Christmas dry "norther", the annual total had recovered to an average; for the benefit of historians, however, the overall distribution was very unsatisfactory.

20. Whilst the rains were proving fickle, the other weather elements decided to join in the fun; hail was reported from one area, and a localised windstorm—'twister'—performed at the head of the Stann Creek Valley late in August.

21. On the 15th/16th of September, warnings were received that Hurricane 'Hilda' was approaching the northern coastline, but fortunately the course passed north through the Yucatan and no damage was reported here. Precautions were however taken in the Corozal and Orange Walk districts.

22. The weather thereafter continued to be most oppressive and the course of "Janet" was watched anxiously in all areas. Urgent warnings were issued on the 27th September and the Miami weather bureau reports were repeated by the Belize wireless and local amateur stations. Precautions were taken in all areas. "By 10 p.m. winds of hurricane force were blowing in Corozal district and continued until 1.30 a.m. on the 28th September, when there was a dead calm until about 2.00 a.m. Hurricane winds then blew again until about 4.30 a.m. when they gradually subsided. The centre of the hurricane had passed directly over Corozal Town. There were no instruments in Corozal District for measuring windspeeds, but it has been stated by an official of Chetumal airport (Mexico) that the anemometer at Chetumal broke after recording a wind speed of 150 knots (*i.e.* 175 m.p.h.). This was the fiercest hurricane in the history of the country and was accompanied by torrential downpours and flooding in large parts of the Northern Districts. There was little flooding from the sea except in Sarteneja where the water is reported to have risen by eight feet.". *The barometer in Belize fell to 29.30.

*Extract from official Progress report.

23. Mercifully "Janet" was succeeded by a week's dry weather, which enabled rehabilitation work to be got under way more expeditiously than would otherwise have been possible. Thereafter torrential rains returned, and through the ensuing months the already battered crops were subjected to repeated flood damage, particularly in the lower Sibun and Belize River areas.

24. The hurricane damage was extremely severe to crops in the area north of Orange Walk Town, and in the Northern half of Ambergris Cay; a secondary belt of less severe damage extended south to Santana at mile 30 on the Northern Road. For the remainder of Belize district north of the Sibun, and in parts of Cayo, maize crops were blown down, and subsequently both maize and rice crops were damaged, before they could be harvested, by flooding. Corn crops in particular had little chance to be ripened off and salvage was disappointingly low.

25. Attempts to plant recovery crops of beans were hampered by the subsequent heavy rains and clearing difficulties, and yields are likely to be low.

26. Even before the hurricane, the southern Toledo district had been in trouble during the early and prolonged dry and, although both this and Stann Creek districts escaped hurricane damage, the overall weather crop story for 1955 was indeed a gloomy one. 1955 will probably remain notorious therefore as the worst season of the century.

27. The rainfall records of the 42 reporting stations are given in Appendix I together with pressure, temperature, and humidity figures from Belize, Stann Creek, and Punta Gorda. Rainfall stations are indicated by numbers on the rainfall map at the front cover, which was prepared by the British Caribbean Meteorological service (Trinidad) from information supplied.

CROPS: GENERAL

28. The effect of a disastrous season's weather on the 1955 crops has already been described. This was particularly damaging for maize, rice and beans; yet the Stann Creek valley was comparatively fortunate and the citrus harvests promise to be a record one, although the fresh fruit size of the grapefruit crop is small.

29. In Toledo district the rice crop, after a bad start due to the drought, recovered well, particularly the later maturing BG 79 variety; purchases totalled over 1 million pounds for the district.

30. The Sugar-cane crop, which is largely confined to the Corozal district, suffered in the hurricane, but is recovering; damage through reduced yields may not be more than twenty-five percent, but harvesting will be difficult and the danger of runaway fires acute. The tendency for shooting from laid stems may also lead to reduction in yields. Because of damage to the factory itself, the start of the grinding season will be delayed at least until February.

31. Inevitably the effects of the hurricane tended not to make any fair general appraisal of the crop situation rational or easy, and in certain areas the hurricane was undoubtedly blamed for crop losses which were more fairly attributable to ordinary weather hazards. Nevertheless the year ended with acute maize shortages in all areas; essential hurricane relief supplies will also be necessary in the Northern districts at least until the next maize crop can be harvested late in 1956.

32. The preparation of a series of crop history summaries, begun in 1954, was continued; ten have now been issued covering:—Citrus, Cassava, Coconuts, Cohune, Sugarcane, Pineapple, Cotton, Tobacco, Bananas and Livestock. Another on Land distribution was also produced, and two more on Cacao and Rice are in preparation. These summary surveys are being prepared jointly by the Agricultural Department and the Development Commissioner's Office; they attempt to collate all the information available from numerous reports and other sources.

IMPORTS AND EXPORTS

33. The Agricultural Imports and Exports for the year are listed in Appendix II (Customs Department Provisional figures); the main changes of interest are:—

Imports:

(*a*) The increased importation of *eggs* and *flour* probably reflect the local maize shortage, resulting from two adverse seasons;

(*b*) Although the provisional import figure for *rice* is shown as 2,644,000 lb. the Marketing Board actually imported 3,050,000 lb. worth $309,960, in 1955; there is therefore little change in this commodity's position;
(*c*) The increase in import of *Milk* products is possibly due to post hurricane relief supplies
(*d*) Red Kidney *Bean* imports are all for seed purposes; and
(*e*) The big increase in imported *cigarettes* (50%) is noteworthy.

34. *Exports*:
(*a*) The reappearance of *banana* exports results from the operations of Messrs. Greene and Atkins in the Waha Leaf Creek area.
(*b*) *Citrus* exports fell slightly from $1,115,477 to $953,404; the 1954/55 crop being below the record one of the previous year, because of less favourable weather conditions;
(*c*) It is of interest that *citrus* exports alone are valued at $953,404 from 4,000 acres compared to total forest exports worth $5,240,553;
(*d*) *Maize* exports to Jamaica were restricted because of the local shortage;
(*e*) *Sugar* exports were more than doubled to $333,751, (2,079 long tons); the nearest yet to the present quota of 5,000 tons, which it is hoped shortly to achieve;
(*f*) *Ramie* exports though rising to 458 long tons, also mark the selling up of C.D.C.'s stocks, the project having been closed down.

CITRUS

35. The publication of the report prepared by the Fact Finding Mission after its visit to British Honduras late in 1954, and the discussions in London between a British Caribbean (R.E.C.) delegation and the Colonial Office, which resulted therefrom, and which produced the Agreement now valid for three years, were of the greatest interest and importance to this country.

36. British Honduras was represented at the discussions in London by the Hon. G. G. R. Sharp, Chairman of the British Caribbean Citrus Growers Association, who was also accompanied by the Hon. H. T. A. Bowman, Chairman of the B. H. C. G. A. to watch B.H. interests.

37. The report recognised:—
(*a*) the vital nature of the industry to the not inconsiderable communities concerned with the growing and processing of citrus;
(*b*) the necessity for research and experience designed to result in satisfactory yields of a higher average quality than at present;
(*c*) the ability of fresh Grapefruit to compete in U.K. markets given adequate shipping facilities;
(*d*) the more difficult prospects for finding fresh orange markets owing to freight and quality (variety) problems;
(*e*) the need for orange juice marketing assistance to offset high freight charges; and
(*f*) American competition.

38. The Agreement provided:—
(*a*) a guaranteed U.K. market for the next three years for the acreage existing at the 31st December, 1954;
(*b*) a price stabilisation fund, in large part covered by the U.K. Government and partially by the local Governments; this to come into play if prices fall below an agreed minimum each year; conversely, if prices exceed a stated maximum, payments would be made into the fund;
(*c*) the local Growers Associations would take steps to keep essential records and make their own organisation more efficient; and
(*d*) the agreement and efficiency of the industry should be reviewed in the third year.

39. Whilst the agreement perhaps fell short of the most optimistic hopes, it has done much to reassure growers at least for the immediate future; it is also encouraging more efficient cultivation. Unfortunately it does restrict expansion, as guaranteed markets are not assured for new acreages. In some respects this is a good thing because the Stann Creek Valley is already heavily dependent on citrus, and any recession would hit that area catastrophically. More farmers are seeking to diversify by planting cocoa therefore.

40. Nevertheless it is regrettable to have to limit expansion in a country which can undoubtedly grow some of the best citrus in the world, and which is still striving to build up a worthwhile agricultural economy.

41. Notwithstanding this, however, a further 275 acres of oranges and 75 acres of grapefruit were planted up in the Valley during 1955, giving total acreages of 887 for grapefruit and 3,842 for oranges.

42. An extensive fertiliser programme is being planned through the Grower's Association and unthrifty trees are being replaced.

43. A smaller number of trees died from Gummosis, and investigations into the cause of losses on Middlesex estate indicated that poor drainage was not responsible: equally, expert opinion continues to discount the possibility of 'Tristeza'. In any event losses have not been serious.

44. The principal pests continue to be the Wee Wee ant (*Atta cephalotes*). Drunken Baymen Wasps (*Melipoma* sp.) and the Mexican fruit fly (*Anastrepha ludens*), the last more particularly in the lower half of the Valley.

45. The factory was affected by labour disputes at various times, but these were resolved reasonably rapidly. Wages tend to continue to rise and could well, ere long, be detrimental to the industry's economic future. Labour is for the present in adequate supply but, with more and more young oranges coming into bearing, the demand will increase considerably.

46. The 1954/55 crops were 197,519 boxes of grapefruit and 25,342 boxes of oranges; up to the 31st December, the 1955/56 crop was 127,930 boxes of grapefruit and 2,216 boxes of oranges; the major part of the latter crop being still to come.

47. Both the first and second crops are good, though grapefruit size has been small, reflecting the effect of the long early dry season.

48. The Citrus Company's record of production for the year is as follows:—

Commodity *Unit*	*Fresh Fruit Bruce Boxes*	*Sections Cases A/2-(24)*	*Juice Cartons A/10-(6)*	*Juice Cases A/2-(24)*	*Juice barrels 42-galls. Natural strength*	*Juice barrels 42-galls. Hicell*	*Juice cases Hicell A/10-(6)*	*Concentrates barrels 42-galls. 4/1 stregtnh*	*Oil lb.*
GRAPEFRUIT:—									
1954/55 Crop ..	33,211	115,039	47,413	21,550	1,142	172	26	91	4,200
1955/56 Crop shipped to 31. 12. 55 ..	36,309	27,500	6,998	3,500	103	5	—	24	100
ORANGES:—									
1954/55 Crop ..	—	—	1,591	28,330	57		—	56	7,134
1955/56 Crop shipped to 31. 12. 55	—	—	—	—	—	—	—	—	354

49. Of the other districts, only the Cayo area contains two orchards of sizeable importance; one of 207 acres oranges produced its first heavy crop; the other, where 9,000 trees were planted up earlier in the season, suffered losses as a result of the dry weather at transplanting.

50. The farmers in the Corozal area suffered severely because, whilst their citrus is of comparatively minor importance to the Stann Creek industry, it does normally provide for them, through fresh fruit sales to Belize and Chetumal, a subsidiary cash crop. Their trees were just coming into bearing when 'Janet' struck.

51. In an effort to assist the most rapid recovery of this cash crop therefore, the agricultural department established small village nurseries in the area and supplied free trees for each holding; these trees were planted up with the assistance of the individual farmers who will care for them thereafter. 1,023 mixed varieties were distributed in Orange Walk district, and 2,132 in Corozal in this way.

COCONUTS

52. Cocals suffered everywhere from the early prolonged drought; later those in the Corozal and Ambergris Cay areas were severely damaged by the hurricane.

53. Destruction was 100 per cent in the northern area of Ambergris Cay and was particularly hard on those whose unaided rehabilitation efforts, following on the 1942 hurricane, were just about to bear fruit.

54. A rehabilitation scheme, based on that introduced in Jamaica after their 1951 hurricane, has been drawn up and will be put into effect as soon as funds have been approved.

55. District meetings were held in Belize and Corozal and at San Pedro to explain this scheme; the recovery plans also include provision for the setting up of a Coconut Industry Board to assist producers and exporters, and to administer a hurricane insurance scheme in the future.

56. Whilst yields were slightly lower because of the drought, the full effect of the hurricane on exports will not be felt until next year. Actual whole nut exports totalled 1,824,800 compared to 2,080,900 in 1954.

57. Little copra was made and little interest is shown in this trade, although a private individual is hoping to set up an oil expressor in Belize.

58 Prices paid to producers in the Stann Creek area remained constant at $30 per thousand for select whole nuts.

59. Cultivation standards have improved slightly in some areas and the rehabilitation programme is designed to encourage better practices.

Red Ring diseases and the Coconut beetle (*Rhynoophorus palmarum*) continue to be the main problems, other than management and the variable weather.

BANANAS AND PLANTAINS

60. The American Company which has leased Crown land in the Waha Leaf Creek area of the Stann Creek district began shipments of Gros Michel bananas to the United States in August. Seven shipments were made before the end of the year, totalling 20,861 stems.

61. Some 350-400 acres have been planted up and bunch size has been particularly good from the Creek side areas. Leafspot disease (*Cercospora*) has begun to give trouble and spraying has been started; Panama Disease is also reported to have appeared.

62. Adequate spraying and fertilising will be of vital importance to the future of this venture, and it is hoped that alternative cropping with Cacao will be introduced to diversify and thus, in part, safeguard longer term development.

63. The P.W.D. have completed the road from Waha Leaf Creek to the loading point at Mango Creek, and continues with the dredging of the Channel. Both these operations have proved more troublesome than was originally anticipated.

64. Plantains, generally, have been in short supply, both because of the drought and the small fruit set, and also because of the small acreages planted and the insufficient attention which is given to weeding and cultivation.

Prices varied from $2.50 to $4.00 per 100 in the Stann Creek area.

RAMIE—*Boehemeria Nivea*

65. The C.D.C. finally closed down their project at Barton Ramie in the Cayo district, because of the difficulty of finding an economic market. The lands have been leased privately, mostly for stock grazing, and the equipment sold. Only one farmer is now continuing with this crop on a limited scale.

SUGACANE

66. It is estimated that 1,825 acres were planted in the main Corozal area during the year, making a total of 5,241 acres in cane. This acreage was spread between 358 farmers.

67. The 1956 yield was originally forecast at 61,257 tons, an increase over actual 1955 deliveries of 21,563 tons. The long drought and damage resulting from the hurricane have however resulted in revised estimates to 36,754 tons (40 % down). Harvesting costs, weeding and loading are likely to be increased because of the hurricane damage.

68. Thirty-two of the fifty fertiliser trials laid down in 1954 were harvested and gave valuable results, indicating that increases of 4—10 tons cane are to be expected from applying a dressing of 200 lb. Sulphate of Ammonia and 100 lb. triple superphosphate per acre to second and third year cane. These results, grouped according to the four soil types, give nett cane value increases of $16.58 to $64.27 per acre.

69. Only one mill test was possible on cane from these experimental plots but this showed that if cane can be delivered within 24 hours of cutting, instead of the 36 to 72 hours which is more usual in practice, the ratio of tons of cane to tons of sugar could be nearer 6.85:1 than 8.66:1.

70. A trial of Barbados varieties at Louisville was harvested in March;* another at Orange Walk was being harvested when 'Janet' struck and no worthwhile results could be obtained therefore from it. Two experiments on types of planting material were laid down at Aventura and Caledonia. Once again 'Janet' precluded results being obtained from the former, but the latter, planted in December, should be assessable early in 1956.

71. Harvesting of the 1955 crop began in mid February and was completed in July; production figures provided by the Pembroke Hall factory, compared to the previous seasons, are:—

	1953	1954	1955
Tons cane ground	24,672.11	21,317.95	39,694.44
Tons sugar made	1,811.61	2,413.43	4,503.03
Tons Cane/Tons Sugar 96% ..	9.25	8.70	8.71

72. The Sugar Cane Cooperative held numerous meetings during the year, and is taking a more active interest in the industry Negotiations were in progress for the members to take a financial interest in the factory prior to the hurricane; since when, however, activities have necessarily had to be concentrated on rehabilitation.

73. In the Toledo District five small mills operated; four of these produced brown muscovado sugar and one rum. Output was:—brown sugar 150,100 lb. and 8,288 gallons molasses from 3 of the mills; and Rum 4,340 Imperial Gallons.

74. The Corozal and Orange Walk distilleries suffered some damage during the hurricane. Their production for the year totalled 17,930 liquid gallons equivalent to 27,556.019 proof gallons.

CACAO

75. Little active progress in the development of Cacao was possible during the year, because the Government's draft pilot scheme for the Sittee River area was still under discussion, both as to the availability of C. D. & W. funds and as to the possible participation of the C.D.C. as landlords and financially.

76. It is unfortunate that yet another year has passed without a definite start being possible, when time is of particular concern for a tree crop; also, with citrus acreages now restricted by the agreement, farmers, particularly in the Stann Creek area, are more than anxious to plant up Cacao and diversify their interests.

77. Nevertheless some progress was achieved both at Kendal, and by private farmers. The Humming Bird Development Company is beginning to plant comparatively large areas on its land at Roaring Creek in the Cayo district, and several Stann Creek farmers, including the Citrus Company at Middlesex, have begun land preparation and planting.

*Results are given in Part III paras. 374-377.

78. At Kendal, the Department cleaned up some 25 acres of 80 year old Cacao, which is heavily laden; after many vicissitudes on the way to Belize, 1,900 clonal cuttings imported from St. Vincent were established under nursery shade, with over 50% take. An air shipment of clonal seed from Trinidad was almost a complete failure, on the other hand, because of delays in transit.

79. With Minor Economic Scheme fund assistance the Department is erecting drying floors and fermentary on the Punta Gorda agricultural station and will buy in wet beans early in 1956 for fermentation trials. A second fermentary will be erected in Stann Creek.

80. In the Toledo area the local crop is usually sundried and sold at 20 cents per lb; a potential market for fermented cacao is, however, leading to increased planting in this area as well.

81. One private farmer, with an estate in the Sittee River area, received a favourable report on samples sent to England during the year.

82. A Cacao Officer has been appointed to oversee work at Kendal; he arrived during December, but is for the present stationed in Stann Creek pending the approval of plans and funds for the main Scheme.

83. A number of small trial plots have been established on the Crown lands along the Humming Bird Highway to test varying soil types and the suitability of this area. The natural shade on one of these suffered severe damage in a local windstorm at the end of August.

84. Various 'wild' Cacao trees have been found in different areas, including White Criollo at Crique Sarco and Waha Leaf Creek, and *Theobroma bicolor* at Barranco.

PINEAPPLE

85. There were 361 acres in the Corozal area at the end of 1954 with the 1955 harvest yield estimated at 400 tons; 70 tons of this was shipped to the Stann Creek factory for canning. Half the remainder spoiled in the fields, and the balance was sold locally and in Belize, where the price fell to 50 cents per dozen.

86. This sorry tale resulted partially because of the dry whether, but largely on account of transport and processing difficulties, the economics of which continue to be problematical and adverse. Further expansion of this crop is not advisable until the economics of canning nearer the production area have been thoroughly investigated, and the potential market more reasonably assured.

87. In other areas production was on a smaller and less intensive scale for local markets.

RICE

88. Progress with the pilot mechanised production scheme at Mussel Creek and the Dump was hampered by the weather conditions; This is reported on separately in Part II of this report.

89. In Toledo district, early crops of B.H. Creole were badly damaged by the dry weather and by birds; crops recovered later and the BG 79 crop did well; purchases in the district totalled over one million pounds.

Promotion acreages were estimated as follows:—

San Pedro Columbia	190
Crique Sarco, Otoxha, Dolores	3
Temash and Moho River	14
Barranco	124
Monkey River	160
Carib Settlement	221
Punta Gorda—Dump	445
Total	1,157

90. Marketing Board purchases totalled 568,587 lb. (Punta Gorda), 17,000 lb. (Barranco) and 84,522 lb. (Monkey River); the Mayan Cooperative at San Antonio purchased 101,450 lb., and other buyers the remainder.

91. Toledo district purchases for the year 1950—1954 were:—

1950	1951	1952	1953	1954
1,074,396	1,143,677	726,838	640,132	617,167

so this year's upward trend is encouraging.

92. Little rice is grown in Stann Creek or Cayo districts; in the former the acreage was estimated to be 102, with yields at 600—1,500 lb. padi per acre; only 1,557 lb. were purchased for the Marketing Board.

93. In Belize district the crop suffered from flood damage, and smut; nonetheless some farmers harvested good crops, and the acreage is tending to increase again in this area, which in the 1930's used to be a major rice producer.

94. In Corozal, crops were severely affected by the hurricane and subsequent heavy rains, which reduced what would otherwise have been a very reasonable yield.

95. The Patchakan Farmers Group, assisted through a Minor Economic Scheme grant of $1,000, cleared and shipped 5 acres of land; four acres of this were then ploughed and harrowed; unfortunately contouring and bunding could not be carried out in time before planting. Yields were disappointingly low because of the early drought, uneven field conditions, bird damage, and hurricane damage at harvest. Costs, per acre, were:—

Clearing (hand)	$6.00
Stumping (hand)	19.00
Ploughing (tractor)	21.49
Planting (hand)	9.20
Weeding	3.08
Harvesting	5.29

96. It is hoped that this area can again be utilised and completed for the 1956 season with better results.

97. Marketing Board guaranteed prices remained unchanged at $5.50 per 100 lb. (13-15% moisture); $4.90; (15-17%); $4.30 (17-18%) and $3.00 over 18%.

MAIZE

98. It has already been reported that 1955 was a disastrous year for maize crops; in Toledo district this was all the more serious following on the previous bad crop of 1954, although the reasons were exactly reversed. 1954 was too wet and farmers were unable to get a good burn to reduce weed competition; 1955 was too dry and plantings had to be repeated; the majority of the Indian villages have continued to be seriously short of corn food therefore. Fortunately, both San Pedro Columbia and San Miguel carried over large stocks from their 1954 harvest, and they again had reasonable crops in 1955. They were thus able to supply their less fortunate neighbours and avert what could well have been a serious famine.

99. The Marketing Board also imported supplies from the U.S.A. but this did not sell in the Indian villages, the price of $7.10 per 100 lb. comparing unfavourably with the $4 per 80 lb. for which they could obtain it in San Pedro and San Miguel.

100. The failure of maize crops, aggravated here in the other districts by Hurricane 'Janet', was reported to be equally serious in the Indian areas of Guatemala and Honduras also.

101. In Stann Creek district a larger acreage than usual was grown; this was estimated at 250 compared to 115 in 1954. In Belize district crops were spoilt by wind and flood damage, and in Cayo wind also seriously reduced yields. Army wormdamage was also severe in many areas. Because of the early drought and the necessity for several replantings, district staff organised exchanges of seed, where obtainable, for Marketing Board imported feed corn, particularly in Cayo and Orange Walk.

102. The Cayo district acreage was estimated at 5,000, some 300 acres more than in the previous years.

103. In Orange Walk and Corozal, the hurricane struck before the late planted crops were mature, and only some 20—40% of the corn could be salvaged; this in the less seriously damaged areas. The Department's tractor and trailer put in a total of 30 days assisting in hauling in some 26 tons of corn from "milpas". Where damage was severe, farmers initially were too preoccupied in providing shelter to be able to devote attention to salvaging corn, and this was made more difficult also by the blocking of milpa trails, and flooding. Most of the corn therefore rotted or sprouted where it was mature, and in some exposed places it was actually blown off the stalks. The pigs for a short time were the only ones to benefit.

104. Generally the disastrous corn situation has also led to a serious decline in the numbers of pigs and poultry because of feed shortage. Seed supplies for the 1956 season will be extremely acute, and one of the recovery schemes allows therefore for the provision of free seed to the hurricane areas. Supplies of J.S.Y. seed from Jamaica are on order, and together with the limited amounts available locally, requirements may just be met, if nothing goes wrong with the early plantings. No reliable seed has been obtainable elsewhere, which could be planted under B.H. conditions, and it would be absurd to repeat the mistakes of a previous occasion when unsuitable varieties failed to head out, because they were obtained from high altitude conditions abroad.

105. Relief food supplies obtained from the United States include hybrid corn, and this will be required until the next harvest; but it is unfortunately unsuitable for planting and also less popular as a feed than the local which is preferred for making 'tortillas', a staple dish.

106. We pray therefore for a good season in 1956, and no setbacks to planting; we could quickly thereafter revert to the export to Jamaica according to the agreement made in 1953, and which had, perforce, to be limited in 1955 to 414 tons.

107. The Marketing Board's guaranteed price remained at $3.25 per 100 lb. and for the year ended 30th June, 1955, purchases totalled 1,230,711 lb.; thereafter purchases have virtually been restricted to the Cayo area alone and in very limited quantities.

BEANS

108. The 1954/55 crop gave generally lower yields than in the previous year but, with increased plantings, purchases were only slightly lower. The Marketing Board price remained at $18 per 100 lb.

109. The Toledo acreages increased in both San Pedro Columbia and San Miguel, and totalled 673. In Stann Creek 100 acres were grown for the 1954/55 crop and 175 for 1955/56. Cayo acreages were estimated at 950 and 432 respectively. Belize and Northern district crops were fair for the 1954/55 season.

110. After the hurricane strenuous efforts were made, in the Northern districts, to assist village groups by clearing communal plots and by issuing seed, in the hope that a good bean crop would provide both food and cash and thus hasten economic recovery.

111. Unfortunately, although six D4 tractors were mobilised and used, only 16 of the 20 village plots attempted could be completed because of adverse weather conditions. Unfortunately, also, the more seriously damaged areas were not ready for assistance as rapidly as the others, and so the clearing there had to be delayed; because the dry then set in early, their bean crops were not a success.

112. Free seed was issued to the Northern districts and in Belize north of a line from Mile 10 on the northern road to Boom and Hillbank. This was largely of the Red Kidney variety, augmented by Black Eye, which is generally regarded to do better in the drier north.

113. Because the fresh seed supplies were limited, Marketing Board stocks from the previous crop were also used, after germination had been tested.

114. Complaints were received, particularly from Belize district, that the field germination of this seed was most unsatisfactory. Actually, whilst there undoubtedly was some poor germination, failures were equally attributable to planting in low lying areas, flooding, heavy rain and wastage of seed.

115. Several groups, with that at Guinea Grass in Orange Walk district being outstanding, made praiseworthy efforts to get good crops, whilst others were less hard working.

116. Over all the plots did provide some assistance but were less successful than had been hoped, or might have been possible, if weather conditions had been more favourable.

117. It is evident that Red Kidney beans are not as successful in the northern areas as other varieties, unless a very particular and limited early planting date can be satisfied.

118. Going south this planting date can generally be progressively later, from end November to early December in Cayo, to early January in Stann Creek and Toledo districts. Whilst most crops for the 1955/56 season are below average there are some excellent ones to be seen particularly in Stann Creek, through citrus and coconuts, and in Toledo.

119. For the new crop, the Marketing Board's guaranteed price has been reduced to $17 per 100 lb.; the Board's purchases to 30.6.55 totalled 570,217 lb. compared to 702,520 lb. in 1954.

120. Rust, Anthraenose and other fungus diseases continue to appear, particularly where Red Kidney beans are grown for more than two years on the same land. Some of the bigger farmers are using sulphur dusts with success but, where the right conditions are fulfilled or new land is used, very fair crops are in prospect.

121. There seems to be no reason why locally grown seed cannot be more widely used, if it is well stored; in the Indian areas in the Toledo district, it is customary to grow a small early crop specifically for seed, and some farmers do this in other areas also, or obtain their seed by using commercial beans from the shops, with success.

ROOT CROPS

122. These continue to be grown on a comparatively limited scale, and could well be expanded both for local market requirement and for hog feed. It is noticeable that the Indians of the Toledo district are taking to planting cassava and cocoes in their corn fields as an additional cash crop.

123. Cassava will always remain a locally important crop for the Carib community on the coast and in Stann Creek, where it is also made into starch and sells at 35-50 cents per quart. The floods in the Stann Creek Valley resulted in some damage through rotting; in Belize district, particularly in the Sibun river area, crops were first damaged by fire and later by floods; some relief food supplies had accordingly to be distributed there.

124. Had root crops been more popular in the Northern districts, the food situation after the hurricane would have been less acute, because Cassava and cocoes are reasonably resilient; they would furthermore have been valuable for hog feed.

VEGETABLES

125. It becomes, unfortunately, an annual event to have to report that vegetable production remains spasmodic and unreliable; excellent vegetables can be grown but production requires better organisation to prevent alternating gluts and shortages.

126. Good cabbage and tomatoes can be produced the year round in Toledo district, but few farmers attempt to do this regularly. In Stann Creek and Belize, the river floods hampered those who concentrate on vegetables, but nonetheless Sibun farmers will have a considerable quantity of Cabbage available early in 1955.

127. In the Northern districts, free seeds were issued after the hurricane, and many small plots have been well tended and are giving some assistance and relief both as food and cash.

MINOR FRUITS

128. The early Mango crop was generally poor, but the later one maturing between August and October was a good one.

Avacado Pears were less plentiful than usual, and the many trees of 'Wild' berries suffered severely in the Northern districts at the time of the hurricane.

Coffee is still of only limited local importance, although sales to stores and in Punta Gorda and Stann Creek are of some interest to a small number of farmers.

MISCELLANEOUS

129. Broom Corn continues as a small local industry for farmer's groups in Orange Walk and Corozal, who supply brooms to the Belize market. Fields and equipment suffered damage in the hurricane, and production still falls short of local demand.

130. Sample brooms, made up from treatment plots of a fertiliser trial carried out by the Department in 1954, were submitted to the British Brush Manufacturers' Research Association during the year. Beating tests were carried out on a rotating machine for 61 hours, without loss of shape; rougher conditions were simulated, and various other tests undertaken. The results indicated that the stiffest fibre was obtained where either Sulphate of Ammonia and Superphosphate or Superphosphate and Muriate of Potash had been applied to the original crop, as opposed to no manure.

131. Plants of *Agave lecheguilla* introduced in 1953 from Kew and planted at Louisville continued to give little or no growth; they have now disappeared as a result of the hurricane.

Ipecacuanha cuttings, also introduced from Kew for the C.D.C. and planted at Alta Vista in the Stann Creek Valley, also have hardly grown at all.

132. Although a number of farmers had agreed with the Cotton Officer, to plant trial plots of cotton on their own lands in the Orange Walk and Corozal districts, this programme

was seriously upset by the hurricane. One plot was planted before the hurricane, and another very late after it; neither can be regarded to be fair trials therefore. The cotton trials at Central Farm are reported separately in Parts II and III.

LIVESTOCK

Cattle

133. The early drought caused considerable hardship for cattle particularly where reserves of grass were inadequate; some deaths were reported, and there was a general severe loss of condition. However losses though serious, were not as alarming as in some previous years, and it is probable that the planting of better grasses, which some stock owners are gradually undertaking, is beginning to have a beneficial effect. Much still remains to be done however before standards can be considered reasonable.

134. Grass plots have been established in various areas to provide a demonstration of better varieties and as sources of planting material; besides the more common—guinea and para, elephant and Guatemala grasses,—sweet grass (*Ixophorus unisetus*), Pangola (*Digitaria decumbens*) and Jaragua (*Hyparrhenia rufa*) are all promising. Pangola is doing particularly well in the dry season and in the northern district.

135. Departmental staff have continued to assist and encourage spraying against ticks in the treating of wounds and warts and in castrations with Burdizzos. One more cattle shute was erected at Chan Pine Ridge, making seven in all for Orange Walk district.

136. The private farmer, who received Government loan assistance to establish a fresh milk supply to Belize could not commence operations on any scale during the year because of delays in the arrival of his essential equipment.

137. The Livestock Association has continued to operate, and has approached Government on several occasions for assistance to the industry. Draft proposals for pasture establishment subsidies and revolving herd schemes are still under consideration. Weighbridges have been installed at all district centres and the control of slaughter of Cows and Heifers order continued in force throughout the year, 1,392 permits being issued, (38% of total slaughter compared to 31.5% in 1954).

138. The average Belize slaughter house carcase weights were 217 lb. compared to 225 lb. last year. Details of slaughter house returns are given in Appendix III.

Pigs

139. Production in the Toledo district declined appreciably because of the shortage of corn feed. Shipments to Belize were as follows:—

Cahunil Marketing Society Ltd.	611
Mayan Co-operative Society Ltd.	1,044
Private	175
Total	1,830

140. No further cases of Swine Fever occurred in the Northern Districts, and the restrictions were silghtly relaxed towards the end of the year, allowing export of vaccinated hogs from the Control area to markets in Belize.

Earlier an inoculation campaign had covered nearly 1,200 head in nine villages in the Orange Walk area.

Poultry

141. Some mild outbreaks of Typhoid and diarrhoea were reported from Toledo and Cayo districts, but generally troubles were not serious until late December when a severe outbreak occurred in Belize, and mortalities of 100% in some flocks were reported. As suspected, this outbreak was later confirmed to be Newcastle Disease.

142. Owing to food shortages there was considerable reduction in poultry numbers, particularly where, as in the majority of cases, birds are not fed balanced rations.

Marketing and Agricultural Loans

143. The Marketing Board continues to offer guaranteed prices for rice, maize, and beans and issued planting loans for maize and rice. Some loans were also subsequently made for beans under the post—hurricane assistance programme, the Board itself having had to refuse continuation of this facility, as it's loan funds were expended to the limit.

144. Local District Committees operated for the first time by scrutinising and approving the rice and maize loan applications; district figures for loans issued, in comparison to 1954, are:—

	1954		1955	
	No. of *farmers*	$	No. of *farmers*	$
Toledo	271	8,237	173	4,738
Stann Creek	6	229	6	192
Cayo	161	8,969	242	9,793
Belize	47	2,598	41	1,581
Orange Walk	58	2,252	279	11,076
Corozal	1	382	34	1,478
Total ..	544	22,667	775	28,858

145. Local Commodity purchases, in short tons, for 1954/55 season were:—

	1953/54	1954/55
Maize	1,434.73	615.35
R. K. Beans	352.26	285.11
Rice padi	296.15	249.70

146. Imports by the Board totalled:—100 short tons of maize, and 1,844.96 short tons of milled rice; also R.K. bean seed valued at $23,297, and maize seed at $699 (1954/55 season).

194,877 lb. of local padi was milled with an outturn of 61.28% clean rice, 21.67% by-products and a milling loss of 17.05%.

147. Longer term crop loans are made through the Agricultural Credits fund financed through D. & W. assistance and managed by a Committee reporting to the Marketing Board.

148. At the end of 1955 the position of this fund was as follows:—

Capital		$300,000
Out on loan	$230,726	
Administrative expenses	4,242	
Loans being processed	47,073	282,041
Uncommitted Balance ..		$17,959
Applications being reviewed ..		$46,450

149. The money actually on loan was spread between 134 farmers, made up as follows:—

	Miscel-laneous	*Vegetable*	*Sugar Cane*	*Broom Corn*	*Cattle Pasture*	*Poultry*	*Coconuts*	*Pineapples*	*Citrus*	*Mixed farm*	*TOTAL*
Corozal ..			7	1	1			23			32
Orange Walk		1			1	1					3
Belize ..					26	3	3	1	1	5	39
Cayo ..					17					13	30
Stann Creek	1				4		2		9	9	25
Toledo ..					4					1	5

150. Whilst it is still too early to assess fairly and satisfactorily how this Scheme is operating, it will shortly require both an intensive review on the ground and extra funds to augument it, as well as limitation of numbers in each area to those which can be adequately supervised by the extension staff.

PRODUCER ASSOCIATIONS AND FARMERS GROUPS

151. The Sugar Cane, Livestock, and Citrus Grower's Associations all remain active, and can fulfil an increasingly important part in their particular crop—industry's development.

152. Additionally a number of farmers, particularly in the Northern districts and the "Scada" group in Stann Creek, are trying to improve their production on a more organised basis. The hurricane recovery programme also allows for several schemes encouraging communal group farming and communal village piggeries, which it is hoped to establish early in 1956.

PART II

WORK OF THE DEPARTMENT OF AGRICULTURE

Staff

153. Mr. M. K. Chopin joined the staff as Agricultural Officer Toledo on 8th January, 1955.

Mr. R. Coe, Development Officer, who had served for two years as Farm Manager, resigned and left on 3rd June.

Mr. D. H. Romney returned from U.K. leave on the 14th June as Agricultural Chemist; he had previously spent two years in British Honduras as a Member of the Land Use Survey Unit.

Mr. G. B. Gregory, Senior Agricultural Officer, left on transfer to Fiji on the 16th August after 6 years service during which he twice acted as Director.

Mr. J. H. Robins, newly appointed Veterinary Officer, arrived from New Zealand on the 24th August.

Mr. C. M. Grieve, Agricultural Officer, who had proceeded on leave to Canada on 7th May, resigned on the 9th September.

Mr. I. S. Hazell, Farm Manager and Mr. G. La Grenade, Cacao Officer, both new appointments, arrived on December 19th.

Mr. J. Chief, Temporary Farm Demonstrator, retired on the 31st December, after 17 years service with the Department; Mr. H. Williams was appointed a Temporary Farm Demonstrator on the 1st June, 1955.

154. Messrs. D. H. Romney, Agricultural Chemist, and E. F. Bautista, Temporary Farm Demonstrator, were mentioned in an Extraordinary *Gazette* on 1st January, 1956 for their good work in the Corozal district after the Hurricane. Mr. J. W. D. Goodban was awarded the O.B.E. in the Queen's Birthday Honours of June 1955.

Overseas Training Courses

155. Messrs. J. A. Lizama and N. L. Williams, Farm Demonstrators, left to attend the Eastern Caribbean Farm Institute twelve months training course on the 14th June. Funds to cover the costs were provided from the D. & W. West Indies Training Scheme; reports on their progress at the end of the year are satisfactory.

156. A six months course in extension work kindly offered by the American Government in the U.S.A. to Mr. F. F. Orio Jr., Assistant Agricultural Officer, had regrettably to be postponed owing to the extra work caused by the post—hurricane recovery programme.

Conferences

157. The Director attended the 3rd Meeting of the British Caribbean Advisory Council on Agriculture and Animal Health in Barbados between 28th March and 2nd April. He also visited Trinidad and Jamaica *en route*. In May he attended the Sixth West Indian Conference in Puerto Rico as adviser to the Member for Natural Resources. when the Agenda covered Education and small scale farming problems.

AGRICULTURAL EDUCATION

158. *Residential Courses*.. A total of 36 trainees—14 Farm Demonstrators, 8 Primary School Teachers, 1 Farmer, 1 Prison Officer, 2 Forestry employees, 9 Tractor Drivers in Government employment and 1 in private employment—attended Courses at the Central Farm Hostel during the first 8 months of the year: of the 36, 8 were Spanish, 6 Carib, 1 Mayan, 17 Creole and 4 East Indian. Distribution by Districts was Belize 3, Corozal 6, Orange Walk 3, Stann Creek 7, Toledo 6 and Cayo 11.

159. *Courses for Farm Demonstrators in Post.* The third since the Hostel opened of a series of courses for this type of personnel was held from January 17—April 15th. It dealt principally with the more important crops of British Honduras, cattle and pig rearing, organized extension work and cooperative effort; it included a 5 day programme of lecturers and discussions arranged by the Registrar of Cooperatives in which he and all of his Staff took part.

160. 14 Farm Demonstrators attended: 10 full time and 4 part-time. Of the former. five had already taken part in a previous Course in 1953 or 1954. Their District Work since then and their approach to this Course indicated that some measure of success had already been achieved in linking the Hostel training with actual district problems.

161. *Course for Primary School Teachers.* The second course for School teachers since the Hostel opened in October 1953 was held from July 4th-29th. It was opened by the Member for Social Services and the Director of Education. It was planned to help the Teachers attending appreciate the part they can play in implementing the Agricultural and Forestry Development programme for British Honduras.

162. On the purely practical side it aimed at introducing the trainees to the principal operations necessary for laying out and the maintaining a home or school garden. A site on sloping land was chosen to enable contour drainage and bunding to be demonstrated.

163. The 8 teachers attending were from Otoxha, Stann Creek Valley, San Antonio Cayo, San Antonio Toledo, San Miguel, San Narciso, San Estevan and Black Man Eddy. They proved to be a remarkably keen and energetic group and, in spite of very bad weather, the amount and standard of practical work done was remarkable.

164. *Special Course.* With the assistance of the local Ferguson Tractor Agent, a Course was held from January 10th-14th. Excluding 2 members of the Agent's Personnel,—1 Farmer, 1 Prison Officer, 2 Forestry employees, 9 Tractor Drivers employed by Government and 1 in private employment attended.

165. The lecturer and demonstrator for this Course was Mr. Miguel Calvillo. It was given mainly in English with interpretations in Spanish as required. The Course was eminently practical, most of the time being spent in the field.

166. In all of the Courses given more than half the time was spent in outdoor practical work.

167. In conducting the Course, the Agricultural Education Officer was assisted by other members of the Department's Staff and by the Director of Education and his Staff; the Principal of the Teacher's Training College, the Marketing Officer and the Registrar of Cooperatives and his Staff.

168. The Department is also indebted to the Guest speakers who gave extra-curricular talks to resident students, mostly in the evenings or out of normal working hours.

169. Apart from scheduled work students kept the grounds and buildings in fine condition and were largely responsible for their own catering. A cook-caretaker and assistant were paid by the students from their subsistence allowances to look after kitchen activities. They themselves looked after their rooms.

170. *District Work.* Between Courses the Agricultural Education Officer spent most of his time following up trainees in the District, visiting schools and collecting information about district problems and group activities.

171. During one of his visits to the Orange Walk and Corozal districts, (May 13th—17th), the Agricultural Education Officer was accompanied by Dr. Vaughan, Community Adviser attached to the International Cooperation Administration of the U.S.A., and Mr. Hansen, technical adviser on aided self-help housing to the Caribbean Commission.

172. Talks on "Agricultural Opportunities" were given in June, July and August respectively to senior pupils of the Technical High School, St. Michael and Wesley College jointly, and St. John's College.

173. From the time of the training Hostel's opening in October 1953 up to August 20th 1955, 59 trainees (exclusive of those attending the special Ferguson Tractor Course) have passed through the Hostel. All of these with the exception of 5 and the teachers attending the last course were visited during the period, some on more than one occasion. Their agricultural activities were noted and, when considered necessary, advice and encouragement given.

174. The Agricultural Education Officer proceeded on U.K. leave on the 29th August, and no further courses could thereafter be held owing to lack of staff. It had been hoped that an Officer would become available from the I.C.A. organisation, but he has not yet arrived in British Honduras.

175. The hostel however gave helpful shelter to departmental refugees from Corozal after the Hurricane.

EXTENSION WORK

176. Few people realise the multifarious duties which the Farm Demonstrators and extension workers attempt for the farmers in their areas; they include:—land inspections for Marketing Board and Agricultural Credit fund loan applications; progress report inspections; location ticket inspections; demonstrations of castration, tick spraying; worming and poultry inoculations; of wee wee ant control, of seed selection for corn and rice, composting, citrus planting and budding; and advice on cropping, drainage and fertilisers.

177. The holding of group meetings and discussions are also encouraged, and these are now becoming routine in some areas, with excursions by farmers' groups to agricultural stations and crop schemes nearby.

178. Demonstrators have also continued to issue slaughter permits and assist the Veterinary Officer in simple stock treatment; to take seed orders and to encourage the establishment of demonstration or communal grass plots, chutes and corrals.

179. After the hurricane they assisted in relief food distribution, whilst also organising communal bean planting and seed distribution. Unfortunately in some areas they were asked to determine on the eligibility of farmers for relief supplies, and inevitably were, on occasions, placed therefore in a delicate and invidious position.

180. Farmers do not always realise that extension staff are there to advise and recommend; where their advice is not accepted, or their reports are contrary to the farmer's own views, the Farm Demonstrator is not necessarily wrong. Extension work mu t, if it is to be successful, include as much or more cooperation and understanding from the farmer as from the Demonstrator therefore.

181. Sixty location ticket inspections were undertaken during the year, of which thirty-nine were recommended for grant of title, eighteen for extension of time, and only three for cancellation.

182. Ploughing and cultivation work was carried out by departmental tractors and equipment in the districts, including bush hogging in Toledo, 25 acres ploughed and 20 acres harrowed in Stann Creek; 115½ acres ploughed in Cayo, and numerous and varied duties of post hurricane assistance in the Northern districts, for which three Ferguson and one Massey Harris tractors were mobilised.

183. In Orange Walk a group of farmers opening up new lands were assisted in the digging of wells, so that they could settle on their holdings.

POST HURRICANE AGRICULTURAL RELIEF WORK

184. On September 28th, as soon as reliable information became available as to the damage caused by Hurricane 'Janet', most of the departmental staff became engaged in assistance schemes to the Northern areas. Staff already in the area were augmented by the Agricultural Chemist who, from Louisville, supervised work in Corozal district; by extra Farm Demonstrators and by equipment.

185. Initially assistance was concentrated upon relief measures for emergency housing and food supplies, the department cooperating in the organisation of depots at Louisville and Orange Walk, and with distribution. At the same time however, sour Orange seed was collected, fruit tree nurseries were established and budded fruit trees supplied and planted.

186. Tractors assisted in straightening houses damaged in the villages, and D4's cleared communal bean farms for village groups. Seed was issued for planting and numerous surveys made; this also in Belize District.

187. All staff worked long hours and undertook an innumerable variety of duties to do all they could to bring help and assistance to the stricken areas. Our thanks go to all those private people who helped by providing tractors and other forms of assistance, all of which made a most valuable contribution to the final achievement.

188. A short summary of the assistance given by the department under the immediate emergency programme in the Northern Districts is as follows:—

Black Eye Pea Seed	1,500 lb.
Red Kidney Bean Seed	16,152 lb.
Black Bean seed	200 lb.
Houses straightened by tractors	256
Land Clearing:—	
Communal bean farms,	
Corozal District	9 plots, 71 acres, 87 days
Orange Walk	9 plots, 91½ acres, 75 days
Fruit tree nurseries	8 established; 8,100 sour orange seed, 175 mango and 519 avocado planted;
Distribution and planting of budded citrus:—	
Orange Walk	1,578
Corozal	2,499.
Tool distribution on loan repayment to the value of $4,000;	
Vegetable seeds	2,245 packets distributed.

189. Plans were drawn up to cover the estimated funds required for
(*a*) the immediate emergency programme.
and (*b*) the long term recovery programme.

190. An early reconnaissance survey led to the determination of zoned areas in which agricultural damage was (1) very heavy and (2) less severe. These Zones were:—
(1) Corozal district, Orange Walk district north of the town and Ambergris Cay, and
(2) Orange Walk district south, and Belize district north of a line from mile ten on the Northern road, West through Boom, and Bermudian Landing to Hillbank.

191. Damage to agricultural crops and property was estimated at about $2,631,000.

192. The immediate emergency measures included:—
(1) the provision of free bean seed in Zones 1 and 2;
(2) the provision of replacement fruit trees;
(3) the issue of free vegetable seed;
(4) the clearing of 18 communal 'milpas' for bean planting;
(5) the issue of grant/loans to pineapple growers for weeding;
(6) the issue of free seed to Broom Corn growers;
(7) the provision of free corn and rice seed to farmers for their 1956 crop.
Estimates totalled:—Grants $43,000 and $26,500 as loans.

193. The long term recovery programme was based on the schemes instituted in Jamaica after their 1951 hurricane and includes provision for:—

1. Coconut rehabilitation grant and loan scheme	$240,000
2. Establishment of a Coconut Industry Board	98,000
3. Citrus orchard rehabilitation scheme	3,000
4. Communal village experimental Farms (2)	26,720
5. Sugar Cane fertiliser grant and Loan scheme	90,000
6. Communal Village piggery scheme (6)	12,500
7. Fruit Tree nurseries	7,500
8. Staff and Administration	62,500
Total	$540,220

194. The assistance of Mr. H. C. Miller, the then Chairman of the Yallahs Valley authority, was kindly made available by the Jamaica Government for the drawing up of the report and plans. Mr. Miller was in British Honduras from 17th-31st October.

195. Work has already begun on the longer term schemes; seed coconut nurseries are being established at Corozal, Carolina and San Pedro on Ambergris Cay, and the details for loan and grant assistance schemes are being collected. Extra fruit tree nurseries, to make up for plants diverted to the northern areas, have been established at Central Farm and Stann Creek, and sixty sows for the communal piggery scheme have been brought in from the hurricane area, and transferred to Central Farm for the breeding up programme.

196. Five extra temporary farm demonstrators have been engaged, from young local farmers who had attended a training course at Central Farm earlier in the year. Two Coopera-

tive Officers are being recruited who will work specifically with the department's extension staff to organise the proposed Communal village schemes; and one Accountant has been appointed to control expenditures in Belize.

197. The long term programme will be spread over the next four years, with coconut and sugar cane loan assistance repayable after thirteen and ten years respectively.

198. Prompt authorisation for the majority of the expenditure envisaged was received from the Colonial Office, and approval for the full plans, together with other rehabilitation schemes for the North, was anxiously awaited at the end of the year, when the Acting Governor and the Financial Secretary went to London to finalise them.

District Agricultural Stations

199. *Orange Walk*. Because of the difficulty experienced by farmers in producing vegetables all the year round, particularly in the latter part of a long hot dry season, two simple trials were conducted to show the effects of mulching and frequency of watering on the weight and time to maturity of cabbages. The first showed that, where mulch was applied, cabbages matured in 90 days and averaged 3.4 lb. in weight compared to 105 days and only 1.8 lb. without mulch.

200. The second trial comparing different frequencies of watering, gave results as follows:

No. of days between watering:—	2	4	7
Average weight (lb.)	1.9	1.1	0.9
No. of days to maturity	95	98	108

201. This small farm is largely used for stock feed, and grass; a further 3 acres were planted up with Para and Elephant grasses, and 1½ acres put down to yams, plantains and groundnuts in September. A small ½ acre citrus orchard was also planted up as a demonstration and source of budwood.

202. Difficulty was experienced in getting the three station cows in calf, but after hormone treatment, all took. The district stud red poll bull, "Central Chieftain", gave nine services during the year.

203. A three year old Jack Donkey, "Blackwood", imported from Jamaica in June for stud service, also gave difficulty with services, until a Jenny was used as a 'teaser'; thereafter six successful services were given.

204. *Stann Creek*. The farm suffered from several floods during the latter rains, but no serious damage occurred. Pastures are improving through rotational grazing, and the two fields sown to 'Jaragua' promise well. The Para grass area, however, has not stood up as well to grazing; a further ¾ acre has been established to 'Pangola' which is growing very well.

205. The Maize crop, despite flood damage, gave 800 lb. per acre, 'J.S.Y.' doing better than the local variety. The 1954/55 R.K. Bean Crop on 2½ acres was very disappointing, yielding only 158 lb. per acre. A further 5 acres were planted late in December, but this crop appears here to be a gamble unless the right planting time can be caught successfully each year.

206. There continues to be a plentiful demand for yam planting bits, with the 'Negro' variety the most popular. Yields per hill were:—Negro 6.3 lb., White 5.7, Yellow 2.7, St. Vincent 8.7, Barbados 11.8, Yampi 1.4, and Chinese 9.4.

207. Small areas were utilised for cassava, sweet potatoes, groundnuts, pineapples and vegetables, but groundnuts are not really suited to this area.

208. Over six thousand budded citrus plants were sold to farmers in all districts and a further 3,145 supplied to the hurricane recovery programme; these consisted of:—grapefruit 1,123, Valencia 510, Washington Navel 152, Parson Brown 250, Pineapple 222, Hamlin 307, Lue Gim Gong 119, miscellaneous 252 and assorted 3,145.

209. A further 2,000 plants were ready for distribution at the end of the year and the 1956 nursery is being budded for 17,000.

210. 536 grafted Mangoes were sold to farmers in all districts, and a further 150 supplied for the hurricane recovery programme. Minor fruit trees, also supplied or available, included Akee, Rambutan, Malay apple, nutmeg, and cherry.

211. The small cacao and coffee plots improved with better shade growth; the old coconut walk also improved and averaged 33 nuts per tree; the demand for dwarf nuts as seed continues.

212. The dairy herd maintained good condition, although five cases of Ulcerative stomatitis occurred, but these were all cured in six to eight days. Four heifers and three bull calves were born, two of the latter being sold locally to farmers. The herd totalled twenty-five at the end of the year.

213. The grade Jersey stud bull, 'Broman', has already begun to make his mark on local stock and gave a further 24 services, of which 7 were for farmer's cows.

214. A pure bred Berkshire boar, 'Whipling Resolute 2nd', imported from the U.K. in January and sent to the station for stud service gave 13; four piglets born to a local sow which died soon after farrowing were successfully hand reared and sold to farmers. A pure bred gilt and a half bred, both raised at Central Farm, were added later in the year, and all these pigs will be used for breeding and their progeny for local distribution.

215. *Punta Gorda.* As for the other district stations, a small area is here set aside for demonstration plots and a source of planting material of crop varieties; these include root crops, oil, pineapples, grasses and coffee; the last through *Cassia alata* and pigeon pea shade.

216. A small vegetable plot was kept going successfully all through the year; indeed this would appear to be one of the best areas for vegetable production in the country.

217. Thirteen rice varieties were tested in small irrigated pans after transplanting at eight weeks at 1 foot x 9 inches; a dressing of 200 lb. Sulphate of Ammonia and 200 lb. Triple Superphosphate was applied per acre in two applications, a month before transplanting and a month after. Lodging was fairly severe particularly amongst the B.G. varieties. Three upland varieties were also tested without fertiliser.

218. The yield results, from plots varying from 0.01-0.05 acres, of the irrigated varieties all sown on 21st June were:—

Variety	*No. of Days to Maturity*	*Yield of padi; lb/acre*	
B.G. 79	146	4,473	
D.114	146	4,436	
D.110	143	4,298	
Century Patna	146	3,812	
D95-42	147	3,406	
Zenith	146	2,928	
D54-42	147	2,642	
Blue Bonnet	140	2,417	
Fortuna	143	2,264	
Texas Patna	157	2,200	(Bird damage)
Magnolia	139	2,074	
Sureno Precos	139	1,829	
Djalein	—	—	(destroyed by birds)

219. The yield results of the Upland varieties, dibbled in and unfertilised, were:—

Variety	*No. of days to maturity*	*Yield, lb. padi per acre*
B.H. Creole (*a*)	121	2,052
B.H. Creole (b)	121	1,191
Blue Bonnet	119	928
Barley	119	526

220. The stud bull, a Brahamn, "Caymanas Blackman", was transferred from Central Farm in March and has given 7 services; the station herd now consists additionally of three cows and three heifers, four of which have been served.

221. The stud Berkshire boar, "Cambusmore Nomad", imported from the U.K., was transferred from Stann Creek in April; he has given eleven services to local sows.

Baking Pot Central Experimental Station.

222. 1955 saw rapid development in the Department's Central Farm, and its functions as an investigational, propagation and teaching centre became more apparent to the public.

Early in June the Farm Manager resigned and the Experimental Officer was Acting Farm Manager until the arrival of Mr. Hazell at the end of December.

223. *Weather and crops.* The rainfall figures for 1955, and rainy days per month, together with figures for the previous six years are shown below:—

	1949	1950	1951	1952	1953	1954	*Rainy Days month*	*Monthly Mean*
January ..	2.90	6.77	1.57	2.45	0.19	2.41	1.83	9	2.59
February ..	0.44	2.01	2.74	0.63	1.01	0.02	2.65	9	1.36
March ..	0.96	1.49	1.11	0.20	0.40	2.88	0.85	6	1.12
April	0.13	0.47	2.25	2.73	0.02	2.38	0.00	0	1.14
May	0.00	0.99	2.33	4.28	8.27	7.86	0.02	2	3.39
June	3.32	10.06	5.51	9.49	2.56	15.14	4.10	9	7.17
July	1.21	4.98	10.60	9.48	4.95	7.05	19.81	25	8.29
August ..	2·35	5.78	3.25	5.26	4.82	7.34	3.76	15	4.65
September ..	4.21	4.80	6.25	5.81	8.09	8.97	5.72	17	6.26
October ..	2.03	8.92	8.78	13.23	5.39	7.39	14.04	24	8.54
November ..	1.96	2.30	5.57	6.74	3.72	2.99	6.89	19	4.31
December ..	5.58	1.60	6.88	2.71	3.05	3.71	3.96	16	3.92
Total	25.1	50.2	56.8	63.0	42.5	68.1	63.6	—	52.74

224. These rainfall figures give a good indication of the difficulties of the 1955 farming year. With only 5½ inches of rain in the first five months, an extraordinarily large proportion of time and money had to be devoted to cutting fire traces, carrying water and supplementary stock-feeding. Cultivation was delayed till late June, with the result that all corn was severely attacked by July-hatched armyworms. The end of the drought was marked by exceptionally heavy rains, which seriously affected most of the corn crop left by the worms. Late corn planting seemed so unpromising that a switch in policy resulted in alternative crops of July-planted Black Eye Beans and August-planted rice; the latter crop suffered in the drier August, but the beans were harvested in time to send North after the Hurricane. The storm on the night of September 27th flattened the last of the meagre corn crop and part of it was disposed of as green corn. Cotton was planted in September and early October—a month earlier than in 1954—and promises to be a good crop except where lack of drainage has restricted growth.

225. It was a good year for dairying despite the drought, but young beef stock did not thrive as during the previous year. The piggery was firmly established as a breeding centre for Berkshire stock, and two pens of black-bellied Barbados sheep were imported late in the year.

226. Citrus sales were below 1954, but sour orange rootstocks for 1956 budding were considerably increased to cope with the replacements which will be needed in the North.

227. The vegetable garden had a most successful year and completed the first stage of its four year, vegetable—grass—grass—citrus nursery rotation, thereby demonstrating that the red clay soils can produce equally as good produce as the black creekside rendzinas which has been cropped since 1949.

228. The area of sown pasture was increased by approximately 40 acres and silage for dry season feeding was made for the first time.

229. All the diversified activities of the farm were experienced by the Students who passed through the Department's training Hostel.

230. *Buildings.* New houses were completed during the year for a Farm Demonstrator, two workmen and the Agricultural Chemist. The dairy was altered and enlarged, the calf pens provided with welded feeding pails and an extension added to the garage to accommodate equipment purchased under the C.D. and W. Livestock Scheme.

231. A new piggery was constructed to provide the extra farrowing space needed for sows which came from the Hurricane area, and a boiler shed constructed. A sheep pen of local

materials was erected for the animals from Barbados, and, after many delays, an effort was made to complete the construction and installation of a cattle spray race, weighbridge, crush and holding yards.

232. A new access road to the Chemist's residence was graded and gravelled, and extensive gravelling done at the piggery and cow yards.

233. The main office, Director's residence, and the houses of the Farm Manager, Senior Agricultural Officer, and Accountant were all painted late in the year by the Public Works Department.

234. *Implements and Machinery.* Four Ferguson tractors were in operation during the year, with one assigned to District work for farmers in the Cayo area and one tied largely to the watering and feeding of livestock. An army surplus four wheeled trailer was re-made, with new decking, into a two-wheeled one.

235. Acquisitions during the year included:—

Mower, Bamford trailer type.
Hammermill, Massey—Harris—Ferguson.
Silage and Greenfeed Chopper, Papec, 7.5 tons/hr.
Cambridge roller.
Broadcaster, Teagle.
Dairy Supplies—boiler, sterilizer chest, cream separator etc.
Cotton Gins—one 12" roller and one 16" saw by Platt Bros.
Water Pump and motor (for mounting on water tank).

236. *Crops*—(*a*) *Red Kidney Beans.* The 1954-5 sowing gave a poor crop averaging 371 lb. per acre from 40½ acres with a seeding rate of 40 lb./ac. and no fertilizer. It is now apparent that the build-up of a disease cycle featuring powdery mildew, bean rust, anthracnose and bacterial blight is inevitable on those areas where bean and corn cropping is the only form of farming. Although an alternative land use is difficult to suggest at this stage, it would seem that B.H. will have to look upon Red Beans as a cash crop following newly-cleared land or run-out pasture, and try even harder to develop a true alternate farming system with livestock. Those farmers who insist on a corn-bean cropping programme without a pasture stage must be prepared to spend money on fungicides if bean yields are to be maintained at the level achieved after high bush. The first of the 1955-6 crop was planted in mid-November and planting continued till early December. It promises to be only a fair crop.

237. (*b*) *Corn.* 25 acres planted on newly-cleared land at Baking Pot were completely destroyed by armyworms and flooding. The remaining 10 acres were devoted to Jamaica Select Yellow and two selections from Central Farm—a flinty yellow and a starchy pale yellow. A total of 8,894 lb. was harvested—equal to 765 lb. per acre when allowance is made for that picked green after the Hurricane. Of this, 423 lb. JSY and 2,000 lb. of local corn was stored in drums with 0.5% lindane-quality BHC for seed; 900 lb. was sent green to Corozal and 2,044 lb. used for pig feed.

238. (*c*) *Black Eye Beans.* These were sown in July on land originally ploughed for corn and yielded 2,238 lb., equal to 320 lb./ acre. 2,100 lb. was shipped to Corozal for food and seed. The seed was imported from U.S.A. and was much superior in size to the local beans.

239. (*d*) *Cotton.* Several U.S. Upland varieties were planted in isolation plots in November, 1954 and harvested April, 1955. The crop was an excellent one and gave yields as follows:—

Variety	*Origin*	*Seed Cloth per Acre (lb.)*	*Stainer—Damaged Bolls (%)*
UK 51	.. Africa	1,670	5.1
Coker Wilds ..	.. U.S.A.	1,680	17.7
9L34	.. Africa	1,698	5.7
26C	.. Africa	943	6.0
C50/20	.. Africa	1,683	6.7

240. Two dustings with "Agrocide 3" (0.65% BHC) failed to give a better quality fibre than plots not dusted and increased insect damage was of little significance. All the crop was ginned and seed saved for 1955 planting. C50/20 proved to be most acceptable to the trade

and in September, 1955, 2 acres of this variety were established, together with 6¼ acres of 26 other varieties of Upland, Sea Island and Egyptian cottons. This work is dealt with more fully under Trials in Part III.

241. (*e*) *Citrus*. Sales of budded fruit would have been good—the demand was keen—rootstocks suffered from the drought. Numbers sold were as follows:—

Valencia orange	1,402
Washington Navel orange ..	62
Other orange, various ..	554
Marsh Seedless Grapefruit ..	107
Other grapefruit, various ..	25
Tangerine	15
King mandarin	30
Stock on hand, 31/12/55 ..	358
TOTAL	2,553

242. 5,000 sour orange seedlings were lined out in the garden for 1956 budding and a further planting was made in October to allow for Hurricane replacements: from these, 12,500 seedlings were lined out in December.

243. *The vegetable garden*. 1955 was the first year since 1949 when trials were made to produce vegetables on the section of the garden with red clay soils: the black rendzinas were planted to Guinea grass which was utilized for citrus mulch. Sales during the year were as follows:—

Cabbage, Kohl rabi	1,189 lb.
Cauliflower	259 lb.
Lettuce	2,701 head
Carrot	338 lb.
Red Beet	225 lb.
String Beans	296 lb.
Peppers (sweet and hot)	481 lb.
Tomato	1,254 lb.
Radish	282 lb.
Miscellaneous (Egg Plant, melons etc.)	1,251 lb.

Citrus 35 boxes of 70 lb.
Total Sales $730.81

244. 91 Hibiscus, Alamander, Bouganvillea, Mayflower (*Tabebuia pentaphylla*), roses, etc. were distributed during the year and 1,034 avocado pear and 556 mango seedlings were lined out for grafting in 1956.

245. The Department buys vegetable seed in bulk from the U.S.A. and packets them at Central Farm for distribution to Agricultural Stations and the public. Appendix No. VIII gives details of this work. All packets are labelled with the date of packing and the minimum germination % at that date.

246. *Pastures and Fodders*. Pangola grass (*Digitaria decumbena*) was successfully established from an initial sackful of cuttings imported from Jamaica, approximately half an acre being planted out in January from the original nursery, and this survived the drought conditions extremely well; 20 farmers in all districts were subsequently supplied with cuttings.

247. 25 acres of Jaragua grass (*Hyparrhenia rufa*) were sown between July and October from seed of Guatemalan origin. The excessively large amount of inert awns in samples of this seed make mechanical broadcasting or drilling extremely difficult.

248. 10 acres of elephant grass (*Pennisotum purpureum* var. Napier) were planted from canes in July and was later used for silage. Seed saved from a trial plot of the indigenous sweet grass (*Ixophorus unisectus*) was used to sow half an acre at the piggery for greenfeed: this grass has proved to be a useful source of low-fibre greens for pigs and poultry. A further ½ acre by the piggery was planted to ramie (*Boehmeria nivea*) using roots obtained from the defunct C.D.C. Barton Ramie project

249. Para grass cuttings (*Panicum barbinode*) were spread on 10 acres embracing the bed of Rufina Creek and established rapidly under conditions too wet for other pasture species.

4 acres of Guinea grass were planted from cuttings but this was a costly process and the remainder of the 10 acre field was sown with Jaragua grass at 20 lb./acre.

250. Late in the year, cuttings of the two grasses Lucuntu and Toko (*Ischaemum aristatum* and *I. timoransa*) were received from Trinidad.

251. A noticeable effect of the six-month-long drought was the disappearance from the natural savannahs of *Axonopus compressus* and its replacement over large areas by *Paspalum centrale*, Chase., and broadleaved weeds.

252. *Silage*. Elephant grass in the early flowering stage was cut in October and ensiled in a pit. The material was cut by hand, taken to the site by trailer and blown into the pit, using the "Papec" cutter and blower. Heating started early, under extremely wet conditions, and the pit was filled to a height of 14' after four days and sealed with 4 " of soil on top. No molasses was added since the ensiled mateiral was already rather mature. Preliminary investigation revealed that side wastage may be considerable because of run-off but this was confined to a few inches on top, and the finely chopped material is of good colour and smell. This silage should provide some 75 tons of dry season feed; the aftermath was used as chopped fodder, mixed with 36% protein concentrate, for the young cattle and the dairy herd.

253. *Stock*. Animals on the farm at December 31st 1955 were as follows:—

Dairy cows in milk	12
Young dairy stock, dry cows	23
Beef cows	18
Other beef stock	10
Breeding Bulls	2
Total Cattle	65
Pigs	12
Sheep	7
Horses and mules	3

254. *The Dairy Herd*. 13 cows were milked in 1955 for 100 days or more. Lactation records are shown in Appendix No. IX. Scales were as follows:—

Milk	2,395 gallons
Cream	28 gallons
Butter	606 lb.
Skim milk to pigs	743 gallons

255. An imported Hope Jamaica Jersey cow died from stomach fluke infestation; 16 calves were reared during the year on whole and skim milk and meal and their weight gains are shown below:—

	Birth	3 wks.	8 wks.	12 wks.
Weight at	63 — 10.8	87 — 11.4	136 — 14.1	182 — 10.6

Ten jersey-cross heifers aged 15 to 18 months were sent to Stann Creek Agricultural Station as a nucleus breeding herd.

256. Four claves were born between December and May (the "Dry Season") averaged 55 lb. at birth, and 12 born between June and November (the Rainy Season") averaged 65 ln. Further numbers are needed to confirm this trend.

257. *The Beef herd*. 18 breeding cows were carried during the year and 10 calves were dropped, all but one of which were by the Red Poll x Zebu bull. The exception ws a single calf by the purebred Zebu later sent to Toledo. This herd was run under natural conditions with no supplementary feeding. 7 bulls aged 11-15 months were sold to farmers as breeding animals.

258. *Pigs*. Six English Berkshires were imported in and of these, 2 boars and 2 gilts were kept at Central Farm. One boar failed to breed and was given Vitamin and Testosterone therapy but has still to prove himself. Only two litters were farrowed in the period under review:—

Sow No.	*No. Farrowed*	*No. Alive at 21 days*	*Weaning Weight (56 days)*
307 (purebred)	9	6	33 lb.
0 (Local X-bred)	10	10	33.1 lb.

259. Two purebred boars were sold to farmers and one purebred gilt went to the Stann Creek Agricultural Station.

260. A feeding trial with 18 local pigs occupied two pens during the year (*see* Trials): 17 of these were subsequently butchered and a gilt sent to Stann Creek for breeding. Several of these pigs in the feeding Trial developed a temporary paralysis of the hind quarters. There were no signs of anaemia but all affected animals responded immediately to treatment with an Iron Phosphate proprietary mixture. It was thought that the adverse Ca/P ratio of the maize—sweet potato vine ration was responsible.

261. In November, two purebred gilts and an in-pig sow developed symptoms of excess oestrogen intake when on a ration supplying 8 lb. of chopped pumpkin per head daily. When the seeds were eliminated the symptoms disappeared.

262. *Stock Feeding*. As a result of the general corn shortage in 1955, the dairy herd were placed on a supplement of 20 parts chopped elephant or sweet grass and 8 parts of 36% cow concentrate (with urea), fed at the rate of approximately 3 lb. per head at milking time. There was no drop in milk yield as a result.

263. Dairy calves were whole-milk fed for the first month, gradually weaned on to skim milk and an oat concentrate, and completely weaned to fresh grass at 10-12 weeks. Beef calves were run with the dams till weaning at 5 months.

264. During the year a system of pig feeding based on meal units equivalent to the fattening value of 1 lb. of corn was instituted: this work is still proceeding but preliminary results with local pigs suggest the following meal unit equivalents:—Skim milk, 10 lb; Pumpkin (chopped), 8 lb; Cooked yams and cocos, Young Sweet or Elephant grass, 6-8 lb; Chopped Sweet Potato Vine, boiled Banana or Plantain, Ramie tops, 4 lb; Red Kidney Bean Meal, Cohune Nuts, 1 lb; Pig and Sow Chow (Purina), ¾ lb; Livermeal (*ex* New Zealand), ½ lb.

265. A mixture of 1 part Livermeal, 2 parts crushed corn was used as a creep feed for piglets from 21 days old: when livermeal was not available, a dried whole milk proprietary mixture was substituted. Local pigs showed a decided inclination to accept solids at an earlier age than purebred animals.

Scatter Plot Trials and Experimental Work

266. During the year the Experimental Officer was attached to Central Farm in the capacity of Acting Farm Manager and, in consequence, District trial work was curtailed.

267. As the stock handling facilities at Central Farm were developed, so the need for more information about local feeding stuffs became greater.

268. The evidence from fertilizer trials, throughout British Honduras in the last 3 years, has led to the conclusion that only sugar cane, peanuts, and certain crops on the Pine Ridge soils respond economically to phosphate and nitrogen: tobacco at Orange Walk and coconuts on Consejo soils are the only crops which have responded to Potash. With few exceptions, it now seems probable that the use of fertilizers on maize, rice and beans is at present uneconomic.

269. Details of the Experimental results of all trials are given in Part III; all information of value resulting from this work is condensed and issued to the Department's staff and farmers in the form of a series of Cyclostyled information sheets.

Tobacco Trials

270. Six acres of cigarette leaf tobacco were planted late in 1954 and in early January 1955 close to Orange Walk. Different varieties and varying quantitites of fertiliser were used, but the experiments were hampered by the late arrival of potash fertiliser.

271. About half the leaf was flue cured in two specially constructed barns; the remainder being air cured. Yields averaged 1,098 lb./ acre and the crop was locally graded by the Tobacco Officer as follows:—

Grade	I		II		III		IV	
	lb.	%	lb.	%	lb.	%	lb.	%
Flue cured	516	15.13	641	18.80	1,315	38.55	939	27.52
Air cured ..	1,026	35.78	975	34.00	429	14.96	437	15.26

272. Although the flue curing results were less favourable than for the air cured, this was attributable to the late arrival of potash fertilisers, the consequent high nitrogen content,—the crop having been grown on new land,—and to the initial problems of establishing the correct curing barn techniques. It was also a particularly and unusually favourable season for air-curing.

273. Leaf samples were submitted for analysis and report both to the Colonial Products Laboratory and to the Royal Tropical Institute, Amsterdam. The major portion of the crop was sold to the local cigarette factory in Belize.

274. The analysis reports were disappointing in the sense that they indicated that considerable further experiment is necessary before a satisfactory leaf can be produced which can satisfy the more particular export market requirements.

275. The nicotine content was found to be too high; this, it is thought here, is probably due to the enforced use of new ground and consequent high nitrogen availability, which encouraged rank growth. It is hoped that this will be overcome by using second year or older land when rotations have been established. Future work will be designed to resolve these problems therefore.

276. The six acres used for the early 1955 crop, were subsequently put d own to a variety of covers through the rains, including 'black eye' and soya beans, *Crotolaria juncea*, *Canavalia ensiformis*, maize, and sweet potatoes. Some difficulty was experienced early in obtaining adequate cover, and white soya matured too rapidly, (2-3 months); black soya, however, taking 100 days to mature, was more promising.

277. Because of the hurricane, and the rehabilitation work it necessitated in the area, further cover crop work was disorganised, as also were the proposed plots of cigar leaf in the northern districts.

278. Trials of cigar leaf were, however, conducted at Central Farm on three different soil types between late June and the end of November. Insect damage was fairly severe, and, during the heavy rains of October, an angular leafspot fungus also gave trouble. Small samples are now being graded for examination and report.

279. Seed for the 1955/56 cigarette leaf crop was cleaned at the Technical High School in Belize, and planted in beds on the tobacco plots near Orange Walk on the 16th November. Transplanting, unfortunately, had to be postponed until the 2nd of January, 1956, because of unavoidable delays in field preparation.

280. Fertiliser trials, including heavier dressings of potash, and comparisons of new versus old ground following different cover crops, will be undertaken. It is already evident that sweet potato is particularly greedy in its potash uptake, and it is therefore undesirable as a preceding crop to tobacco on these sandy soils.

281. The first year's trials, therefore, have indicated that further experiment is necessary to achieve better quality and to establish suitable rotations; that stumping the land is essential;—this was done on 5 acres of the trial area,—compared to the local method of using unstumped land, (and incidentally also showed to advantage in the following maize crops); that these pixoy' soils, when in a virgin state, have too high a nitrogen content for flue cured tobacco, and that they require additional fertilising with Phosphate and Potash. They also indicate that the newer U.S. selections do better than more common Virginian varieties, and that December plantings would be better than January.

Rice Pilot Schemes.

282. The rice schemes financed by C.D.W. grants D2124 and D2368 had their full year of operation in 1955. The rice work is divided into two main operations, the pilot scheme at Mussel Creek in the Belize District and the development area in the "Dump" in the Toledo District. In addition, the rice Officer renders assistance to the agricultural officers in the districts in their rice experimental and extension work.

283. *Objectives* (*a*): *Dump Toledo*. The plan for the Dump is to clear mechanically 100 acres of high bush and to build an access road and ditch and other drainage ditches as necessary. The area initially is to be farmed by a group of farmers using their present methods. The Agricultural Officer of the district will work closely with them to encourage good cultural practices. Investigations are to be carried out later to determine the feasibility of using mechanized equipment and water control under the soil and climate conditions of the Dump area. It is hoped that this will lead to permanent agriculture instead of the traditional bush fallow for Lowland rice.

284. (*b*) *Mussel Creek, Belize.* The Mussel Creek project is a pilot mechanized scheme. There are three types of land available at the site of the scheme:

Type	*Soil*	*Vegetation*	*Slope*
Savannah	Clay	Grass and weeds; No bush	Nearly level Annual flooding
High bush	Clay	Swamp bush-bamboo cabbage palms etc.	Small uniform slope; Occasional floods
Pine Ridge	Sand overlying dense sandy-clay ..	Low bush-palmetto, pine, oak, crabboe,	Moderate to small (irregular)

The object of the investigation is to determine the practicability and costs of mechanized production on these soils, best varieties for different times of planting, fertiliser requirements and feasibility of rotation with grass and thus combining rice and stock raising.

285. One important aspect is the investigation of the possibility of growing more than one crop a year (on different fields) in order to (*a*) obtain greater production per amount invested in machinery and (*b*) provide year round employment for the farmer. With adequate flood protection and irrigation water, the ability to grow crops at various times will mainly be limited by the ability to prepare land for planting. Three main times for planting rice are suggested:

1. Early as possible after the end of the rainy season (January),
2. Later in the dry season (April May) and
3. "Maugre" season (usually August). With appropriate varieties this will place harvesting at a time likely to have favourable weather.

286. For water management at Mussel Creek the following facilities are planned:

1. A reservoir capable of storing 450—acre feet of water,
2. Flood protection embankment for low-lying fields,
3. 18-inch pump for irrigating from the creek to the savannah or from flood waters to the high bush fields,
4. Canals and ditches for conveying water, and
5. Exploratory well.

287. *Progress* (*a*) *The Dump*: Because of the short dry season and breakdown of equipment only about 60 acres were cleared by the landclearing D–8 in the Dump in 1955. It is hoped to complete the work in the dry season of 1956. Farmers were allowed to use the cleared land, and were issued rogued B.G. 79 seed; their crop was rogued again at harvest and some 20,000 lb. seed purchased for the Marketing Board at a premium price of 1¢ over the normal 5½¢ per lb.; this will be used for sale to farmers in 1956.

288. (*b*) *Mussel Creek*: Housing for the rice officer, his assistant and a mechanic-driver were built by contract during the year. A small office was also built. A 32′ by 96′ Quonset and a 12′ by 96′ adjoining shed were built by rice station labour. A total of four and one half miles of fence were erected. The landclearing D–8 and D–4 and a rented D–7 built three miles of farm roads and half a mile of canal. The reservoir embankment was approximately three-fourths completed by these machines before wet weather stopped the work. Approximately 80 acres were cleared including the areas for the housing site, roads and reservoir embankment. Water level gauges were installed at Boom ferry, Sebastian bridge and Bermudian Landing, and systematic recording of river and creek stage has begun. A six-inch well was bored to 90′ by the P.W.D., but no water was obtained. It is hoped to go deeper when that Department's new drilling rig is available.

289. *March planted crop*: Seventy acres of the land in the savannah were prepared and planted to rice in early March. Equipment did not arrive in time for earlier planting. Later planting was not advisable as there was no protection from the likely floods. Irrigation water was supplied from Mussel Creek which proved insufficient. This deficiency aggravated by a more severe dry season than usual resulted in a virtual crop failure. The normal July flood prevented a later crop although some 25,000 lb. were harvested. The estimated cost of production, assuming adequate water control and a normal crop, was $109.14 per acre.

290. *August planted crop*: About 25 acres of the high bush were cleared in time to plant in August. Although there had been heavy rains in July there was a sufficient dry period to prepare land for 23.4 acres. Water from the reservoir early in the growing season and heavy rains and flooding later, provided sufficient water. The harvest has not been completed, but

yields will be fairly low. This is due to too little fertiliser used on the upper half of the field, by deep flooding on the lower half and by heavy insect and bird damage. Costs were $71.59 per acre, and at an estimated yield of 1,500 lb. per acre, $4.77 per 100 lb.

291. *Experimental work*: The high bush area set aside for small plot experiments was not cleared until August. Several preliminary experiments were begun thereafter as a prelude to more extensive tests next year.

292. Experiments underway include a fertiliser trial of water planted century patna. The rice for this test was planted as sprouted seed in about six inches of water with no drainage of the water after sowing. This method proved successful and indicates a way of controlling weeds should they become troublesome in later years. A late December trial seeding of two varieties by this same method has been made.

293. The selections of the local rices, B.G. 79 and B.H. Creole, made last year, were planted on September 20th, each individual head to a row. Much of the B.H. Creole seed apparently lost its viability, but those that did grow may prove of value and each will be increased and further tested as a possible source of pure line seed of that variety. The time of blooming for this date of seeding was about December 31st. The B.G. 79 germinated and grew well, but this variety proved to have a positive photo-period response; that is, it tends to mature at the same time each year regardless of the date of planting. Some of the plants started to bloom 80 days after sowing. The heads maturing in December were blighted for no apparent reason.

294. Two variety-fertiliser trials of grasses and clovers sown on rice field stubble with no land preparation were put out. The dates of seeding were November 17th and December 23rd. A similar test was put out on December 9th on a pine ridge soil (not previously in rice). These tests together with previous work by the Department will give information on forage crops that might be used in rotation with rice.

295. *Costing*: It is difficult to make a realistic analysis of the costs of production of the rice grown thus far at Mussel Creek because sufficient land for full utilisation of the machinery has not been available, and flood protection and irrigation facilities have not yet been completed. Therefore, costs are based partly on certain assumptions. The basic assumption is that two men can operate a rice farm capable of producing three crops of 70 acres each per year using one 50 to 60 horsepower tractor and related machinery including a self-propelled combine harvester. Actually a combine should handle a greater acreage than this.

296. For the savannah crop it has also been assumed that the required flood protection is available and a charge was made for it. If a crop yielding 2,500 lb. per acre had been produced the cost per 100 lb. would have been $4.39. For the high bush field at an estimated yield of 1,500 per acre it would be $4.77. This is the cost at the farm and does not include transport to town or drying. Neither does it include land rental, taxes or storage for equipment. No value is assigned to the pasture available for the remaining months of the year.

297. Equipment operating costs are less for the high bush because the land is largely prepared the first year in connection with the clearing operation. Also water is supplied by gravity from the reservoir instead of being pumped. Labour is also less for the high bush land for these reasons. The fertiliser cost for the savannah is probably higher than necessary.

298. Since the Mussel Creek station is also to serve as a centre for rice research and seed processing, labour and building costs allotted to that function are not included in general production.

299.

	Savannah		*High Bush*	
	per acre	*percent*	*per acre*	*percent*
Fencing	$0.87	0.8	$1.56	2.2
Water Control	12.45	11.4	4.00	5.6
Landclearing	—	—	2.75	3.8
Equipment	23.59	21.6	23.60	33.0
Equipment operation ..	20.00	18.4	6.84	9.6
Labour	12.90	11.8	7.48	10.4
Fertiliser	27.09	24.8	8.36	11.7
Seed	12.24	11.2	17.00	23.7
	109.14	100.0	71.59	100.0

300. *Water Analysis*; *Mussel Creek*, 1955.

	March	*July*
Chlorides	42 ppm	27 ppm
Sulfates	211 ppm	316 ppm
Hardness	212 ppm	390 ppm
Total Solids	330 ppm	506 ppm

301. *Other Rice trials*: *Toledo.* Four acres of land in the Dump area, which had been abandoned for several years were tractor ploughed, harrowed, and bunded. Half the area was not subsequently planted because little water was retained; the other two acres were transplanted up with seedlings of B.G. 79 from the Agricultural Station; one acre at 1'x 9", and the other at random. Growth was excellent and virtually weed free; unfortunately high winds near to harvest caused 50% lodging, which was most severe in the row planted block. Yields were 2,083 lb. padi (row planted), and 2,551 lb. per acre.

302. *Carib Settlement Area.* A two acre block was cleared in the Carib reserve, one half for pasture and one half for rice in rotation. Rice plots were bunded, and plantings of Blue Bonnet and B.G.79 made for comparison of dibbled seed and transplanted seedlings. Results were disappointing because of severe bird damage, although the transplanted plots were far more weed free and of better growth than those dibbled, the B.G. 79 giving 1,464 lb./acre. Unfortunately also, the Carib farmers themselves showed little or no interest in the trial.

303. *Fairview School.* A small fertiliser trial was laid down at Fairview School near the Agricultural station, where teachers and children cooperated with great interest. Yields and treatments were:—

Treatments

C— no fertiliser
N—260 lb./acre Sulphate of Ammonia) applied one
P— 88 lb./acre triple superphosphate) month after
K— 44 lb./acre Muriate of potash) sowing.

Yields (lb. padi per acre).

C	1,306
N	1,147
P	1,481
K	1,422
NP	2,032
NPK	1,728

304. *Land Clearing.* Work was once again hampered but not held up during the heavy rains; during the year one D8 worked throughout for the Rice Scheme at Mussel Creek, and one D4, until it was moved north after the hurricane. The second D8, after completing work in the Cayo area, was moved to Toledo district for work on the Dump pilot rice scheme, where it remained, inoperative, after the heavy rains set in. The second D4 operated in the Cayo area until it also was sent north for communal farm clearing after the hurricane.

305. Both D4's underwent complete changes of rollers and tracks, before they had completed the expected three years' life. Severe hold-ups were experienced in delivery of essential spares, which resulted in a poorer operating performance for all tractors than should have been normally practicable.

306. Work on the Mussel Creek rice scheme proved slower than anticipated, because the bush could not be cleared by D4's and the land itself was wetter than expected. A D7 was hired privately to speed up this work therefore.

307. Work in Toledo was also more difficult, because of delays experienced in transporting equipment, and supervision problems, although the A.O. Toledo was able to cover the latter effectively.

308. Hurricane 'Janet' added to the work and supervision problems, necessitating the movement north of five D4's over flooded and damaged roads, and thereafter the heavy rains made clearing of the communal bean farms a protracted affair. Four D4's were loaned or hired privately to assist the Department in this work, and the Unit's power wagon also proved invaluable for supply and food distribution purposes.

309. Staff wages were adjusted to equate to those paid by the Public Works Department; and Service recorders were fitted to tractors during the year. A summary report on the first two years experimental operations is in process of compilation.

310. Work completed during the year comprised:—

Clearing, windrowing and harrowing (Private applications)	142½ acres	
Clearing, windrowing and harrowing (Central Farm)	160 „	
Clearing—Dump rice scheme	66 „	
Clearing and windrowing. Mussel Creek rice scheme	80 „	
Roads. Mussel Creek		2½ miles
Canals. Mussel Creek		½ mile
Earthworks and reservoir		30,000 cu. yds.
Clearing: Communal Bean farms, Northern Districts, post hurricane programme	159 acres	(13 villages)

San Antonio, Toledo, Soil Conservation Demonstration Holding.

311. A forty acre area was taken over in 1954 close to the Maya Indian village of San Antonio, with the object of demonstrating to the Indians that a more permanent system of farming could be established on the steep hill country in which they now practice shifting "milpa" cultivation.

312. Ten acres were cleared and contour drains laid out, so that three crop areas have been demarcated. The hill tops are being planted up to improved grasses, including Guinea, dallis and molasses, intersown with Kudzu (*Pueraria phaseoloides*); the middle strips are being cropped with maize, rice and beans, and the valley bottoms planted to cacao, seed at stake, with *Cassia alta*, Plantains, Pigeon Pea, Cassava and Cocoes as low shade, and *Erythina* sp. as top shade. The contour drains have Vetiver grass barriers planted above, and Coffee below on the lowest drain only.

313. Records are being kept of costs, yields and returns, and the full forty acres will be progressively established. Tethered cattle and pigs will be introduced as soon as fodder is sufficient, and, ultimately, volunteer families will be settled on the holding. Already there are a number of would be applicants, and the project is exciting considerable interest.

314. *Land Use Survey*. The report of the Land Use Survey, which was completed in 1954, is still being abridged and printed in England; a few advance cyclostyled copies became available for official use during the year.

Agricultural Chemist's Report

315. The Agricultural Chemist, who had returned from leave after a two-year tour in the Colony with the Land Use Survey Unit, arrived in the Colony on June 13th, and was stationed at Central Farm. Two weeks were spent at I.C.T.A., Trinidad, to hold discussions with the Soil Chemist and Librarian of the College, particularly on the Agricultural chemistry of cacao.

316. The remainder of June was taken up by tours. In Toledo the Crique Sarco Settlement Scheme and the San Antonio Demonstration Plot were visited. In Stann Creek newly planted cacao seedlings were inspected. A week was also spent in Orange Walk and Corozal Districts.

317. Farm Demonstrator W. T. Ebanks, who had been trained with the Land Use Survey Unit, terminated extension work and assisted with soil survey as from July.

318. The following survey work was performed:—

(*a*) Approximately 1,000 acres in detail at Canada Hill Land, Stann Creek Valley; 12 soil types were mapped. On the basis of this survey about half the blocks in the area were designated as suitable for agricultural development. Many of these blocks have since been occupied. The remaining area is suitable only for pine plantations, particularly as water supplies may be difficult.

(*b*) Approximately 2,500 acres in semi-detail in the Tipperary-False Creek area (C.D.C. land) Stann Creek Valley; 18 soil types or complexes were mapped. 1,000 acres were deemed suitable for agriculture, mainly for citrus or cacao. The other 1,500 acres were either too hilly for agriculture or possess such a low fertility and poor tractability as to render agricultural development very difficult.

(*c*) Request for additional farming land by small farmers in Stann Creek Valley led to a broad-scale survey of 3,500 acres in the headwaters of Mullins River. Soil

here are acid, fairly well-drained, but extremely erodible. The area as a whole is suitable only for tree-crops. Arable crops could be grown only with strict attention to anti-erosion measures. The soils could well be used for cacao, and land suitable for this crop was demarcated on the map.

(*d*) Owing to the difficulty of road-building in an erodible area such as the headwaters of Mullins River, a reconnaisance survey was carried out in Big Eddy Valley, Stann Creek, where an estimated 500 acres of good agricultural land were found and mapped.

(*e*) The pattern of sugar-cane fields in Corozal District is one of ribbon development along the feeder roads. Surveys in 1954 showed that transport charges constitute up to 35% of the cost of production, yet unused land suitable for sugar-cane exists relatively near to the factory. Following a survey of the Ramonal Sapote Reserve, to map on a large scale the easily-developable sugar-cane land, the alignments of three short feeder roads were put on the map. Adjustment of the lines for these roads was done later in conjunction with the Town and Country Planning Department.

(*f*) Prior to the arrival of the Cacao Manager, a reconnaissance survey was performed in the Kendal area, Sittee River. Soils suitable for cacao were approximately demarcated and the interim work on cacao planned.

319. Dying of individual trees and branches in the groves of the Citrus Company's Middlesex Estate led to a soil survey to ascertain whether there was any correlation between incidence of disease and poor drainage. No correlation was found, neither was gummosis prevalent. If anything, dying off appeared to occur more frequently in droughty areas. The "disease" always displayed the same symptoms: yellowing of leaves and fruit on an isolated branch; dying of the wood; spread to the rest of the tree down to the bud union; fairly strong sprouting of the sour orange stock. Detailed records were available for only one or two years but there was no consistent proof that spreading of the disorder was prevented by circling the tree with a trench 2′ deep. The disorder did not spread out radially from a dying tree as might be expected from a centre of any further dying off. Meanwhile, pruning back to good wood is preventing spread of the disease.

320. Fertiliser trials were designed for citrus in Stann Creek with a view to improving both yield and 'brix'; for tobacco in Orange Walk to decide more exactly the balance of fertiliser required to produce good quality bright leaf on the potash-deficient soils in use there; and for bananas in the new plantations at Waha Leaf Valley, where growth on granitic soils *situ* is much less vigorous than on the high terrace soil.

321. Small farmers cutting fodder for horses have caused some spreading of Johnson grass (*Sorghum halenense*) from a plot at Corozal Agstat. A simple spraying trial was laid down on plots of 1/50 acre using:—

A. Dow Dalapon (85% Sodium salt of 2, 2-dichloropropionic acid) at 16 lb./acre.
B. Sodium chlorate at 100 lb. acre.
C. Diesel oil at 50 galls/acre.
D. Karmox (3-p-chloropheny 1)—1, 1-dimethylurea) at 75 lb./acre.

After 4 months A and B showed some reduction in growth but very little mortality. C caused only foliage damage. D elicited complete kill without any regrowth from deep rhizomes up to the last observation.

322. During intervals between field work, Central Farm has been surveyed and a map prepared showing drains, fencelines, gates and buildings.

323. Considerable time has been spent on extension work, particularly in relation to land use and fertiliser requirement. To this end a portable soil test kit has been of some value. Numerous farms and estates have been inspected, some to assist with farm planning and some for the purposes of A.C.F. loans. Several farmers meetings have been held.

324. Some time was spent in compiling and writing information sheets and in collecting and sorting library material with a bias towards agricultural chemistry. 14 chemical reference texts and dictionaries have been added to the library.

325. As from 28th September, the Agricultural Chemist has been almost wholly occupied in the Corozal District with rehabilitation work following hurricane Janet. Work had commenced on pot trials but was interrupted by this catastrophe.

Livestock Diseases.

326. *Animal Disease Survey.* The survey initiated in 1954 as a minor economic scheme has been continued since the reappointment of a Veterinary Officer. A host parasite list is published as Appendix XI. This is very incomplete but forms a basis to which other parasites can be added. Livestock in general appear to be surprisingly free of the common tropical diseases, including trypanosomiasis, piroplasmosis and anaerobe infections.

327. *Cattle.* The nodule worm, (*Oesophagostomum radiatum*) is a major internal parasite of cattle. A chronic scouring disease was investigated on one Cayo district property which regularly causes the deaths of up to ten cattle annually, and found to be due to extensive accumulated damage caused by this parasite; Johnes' disease was suspected but was eliminated as a possible cause.

328. The rumen fluke, (*Cotylophoron cotylophorum*) was identified as the cause of death of one dairy cow at Central Farm. The parasite was also seen in small numbers in a post-mortem at another property in Cayo district. A morphologically distinct fluke, probably *Paramphistomum ceryi*, was also seen at the second autopsy. These are the only flukes found to date in the country.

329. *Vesicular Stomatitis* has not been as common as in previous years. Material, sent to the Animal Virus Diseases Research Institute at Pirbright, gave a positive complement fixation test for *Vesicular Stomatitis* (New Jersey strain).

330. Twenty-eight blood tests have benn made for contagious abortion and sixteen tuberculin tests, all with negative results.

331. *Pigs.* Swine fever has not been reported this year from the northern districts (declared an infected place by S.I. No. 44 of 1953), and S.I. No. 34 of 11th November, 1955 has relaxed the restrictions on movements in and out of the infected area, subject to official control which includes vaccination.

332. A survey for *Trichinella spiralis* is underway with material obtained from the Belize Slaughter house. Samples from 125 pigs had been examined by the end of the year, by the standard microscopic technique, with negative results. *Cysticerous cellulosae* has also not been found.

333. The kidney worm (*Stephanurus dentatus*) is very prevalent, causing damage to at least 50 per cent of the pork carcases at Belize. *Oesophagostomum dentatus* (nodule worm) and *Hyostrongylus rubidus* (large stomach worm), are the major internal parasites of swine and, combined with malnutrition, cause widespread unthriftiness and occasional deaths. *Ascaris lumbricoides* is surprisingly uncommon. *Macracanthornynchus hirudinaceus* is fairly common, and probably has frequently been mistaken for *Ascaris* to which it bears superficial resemblance.

334. *Horsekind. Psoroptic* mange was found on eight horses on one property in Cayo district, the parasite appearing to thrive despite regular spraying with gammexane suspension for tick control.

335. *Poultry.* A severe outbreak of poultry disease started in Belize city on about 26th December. By the end of the year mortalities of up to 100% had been reported in about twenty small flocks. The condition was later verified to be Newcastle Disease.

336. *Dogs.* There has been a wide outbreak of distemper in Belize during November and December.

337. *Filiariasis* (*Dirofilaria immitis*) was demonstrated for the first time in a dog in Belize in November.

338. An outbreak, thought to have been Fowl Cholera, occurred in the Cayo area early in January. Arsenical Dip poisoning caused the death of seven animals at Never Delay in March.

Crop Diseases and Pests

339. Small swarms of hoppers of the grasshopper, *Tropidacris dux.* Drury, were reported from Stann Creek, Waha Leaf Creek and the Mountain Pine Ridge in May and June.

340. The U.S.D.A. list of intercepted Plant pests for 1954 notes the following as having emanated from British Honduras:—

Hedylenta indicta (F) (Pyraustidae) and *Picturaphis vignaphila* Blanch. (Aphidae) on Kidney bean; *Stenoma catenifer* Wilson. (Stenomidae) on avocado; and *Vinsonia stellifera* West (Coccidae) on Orchid.

341. The Chief Entomologist of the Infestation Control Division of the Ministry of Agriculture and Fisheries, Tolworth, England, reported the following insects infesting maize shipped from British Honduras in 1953:—

Calendra oryzae;
Calandra granaria;
Tribolium castaneum;
Oryzaephilus surinamensis;
Tenebroides mauritanicus.

342. The main insect pests however continue to be:—

Weewee or Parasol Ants (*Atta cephalotes*),
Mexican fruit fly (*Anastropha ludens*),
The Coconut beetle (*Rhyncophorus palmarum*),
Cotton Strainers (*Dysedercus sp.*)
and Sugar Cane Froghopper (*Aencolamia postica jugata* (Fowler),

343. Crop diseases include rusts and anthracnose on red kidney beans, smuts and blindness on rice, red ring in Coconuts, Leaf spot on bananas Gummosis on citrus.

344. Ground moles are troublesome to cultivations and 'Tigers'—in reality Puma or Ocelot,—do sometimes attack cattle in all areas.

345. Johnson grass, *Sorghum halenense*, which is spreading around Corozal, was being treated chemically in trials of eradication, but this work had temporarily to be suspended because of the hurricane.

346. *Legislation*. The only agricultural legislation enacted during the year was S.I. No. 34, The Swine Fever (Infected Places) Rules 1955.

Committees.

347. The Director served on the following Committees:

The Marketing Board, the Agricultural Credit Fund, the Land Tenure, the Roads and Rural Water Supplies Sub-committees.

348. In the Districts, the Senior agricultural representative served on committees processing Marketing Board annual crop loans and, in Toledo also, on the local development Committee. In the Northern Districts the Agricultural Officer and Agricultural Chemist were responsible for the agricultural sections of the immediate hurricane recovery programme for Orange Walk and Corozal; they and all Staff were intimately concerned also with the early relief measures and feeding programmes.

Visitors.

349. As usual, a large number of visitors were welcomed at the Central Farm and district agricultural stations including:

Lord Reith, Chairman C.D.C.; Mr. J. O'Regan O.B.E. A.C.S., Jamaica; Mr. J. R. Spence, E.C.G.C., Antigua; Lord Lloyd, Colonial Office; Messrs. Clay & Currie of the I.C.A., Mr. C. F. U. Petter, Educational Adviser D & W Barbados; Mr. O. H. Morris of the Colonial Office; Miss F. Gwilliam, Asst. Education Adviser Colonial Office; the Corozal Young Farmers Club; Dr. Theo Vaughan, Community Adviser F.O.A., Mr. Percy Arnold, Editor the New Commonwealth; Messrs. Hanson, Jourdan and Rivera of I.C.A., Mr. J. Henry Burke U.S.D.A., Messrs. Russell, Allen, Reeves and Leather of the U.K. Parliamentary Delegation; Mr. C. H. Brown, Cotton Officer British Guiana; Mr. H. Williams Jr., Veterinary Officer Trinidad Department of Agriculture; Mr. H. C. Miller, Jamaica Department of Agriculture; Mr. N. L. Mayle, C.M.G., Colonial Office; Mr. A. de K. Frampton, C.M.G. Agricultural Adviser to D. & W. Barbados; Eng. H. van Dam, UNICEF; Mr. B. J. Surridge C.M.G. O.B.E., Cooperative Adviser Colonial Office.

350. His Excellency the Governor, Members of the Legislative Assembly, and Heads of Departments, as well as numerous others, also visited the different departmental activities.

Acknowledgements.

351. In concluding this report for a year such as 1955 has been, there is all the greater reason for expressing thanks, not only to the Staff of the Department who have had extra work thrust upon them, but also to the many others who have helped us in a multitude of ways both because of the Hurricane and in other respects. Their assistance has been invaluable and is most gratefully acknowledged.

352. Because of the ever widening work on which the Department is now engaged, and because the facts and results of this work are of considerable importance to the future; this report is the longest on record. A third part has now been added to include separately detailed results of experimental work.

J. W. D. GOODBAN,

Director of Agriculture.

PART III.

Results of Experiments.

353. *Fertiliser Trials*: (*A*) *Coconuts*: Several cocals where measurements had previously been recorded were destroyed by the Hurricane. The stand of 2½ year-old trees at Consejo with 20 replicates was not badly damaged, and results after 18 months and 2 fertiliser applications for 19 complete replicates were as follows:—

	Treatment							
	Control	*N*	*P*	*K*	*NPK*	*NP*	*NK*	*PK*
Mean height per tree (ft.)	2.67	2.53	3.25	2.90	3.99	3.80	2.68	4.60
Std. error (ft.)	0.27	0.14	0.16	0.55	0.37	0.21	.56	0.26
Significance	—	NS	NS	NS	†	NS	NS	††

Measured January 14th. 1956.
N =4 lb. Sulphate of Ammonia per tree p.a. in two applications.
P =1 lb. Triple Phosphate per tree p.a. in two applications.
K =2 lb. Muriate of Potash per tree p.a. in two applications.
NS =not significant
† =significant at 5% level
†† =significant at 1% level.

Thus there is some evidence that the infertility of the Consejo soils may be attributed to induced major element deficiency caused by the high free calcium status of the area, and not entirely to Boron excess as earlier indicated by coconut leaf analyses. Chemically available Potash is high according to Trinidad analyses, but in this trial there is evidence of response to Potash when Phosphate is also applied.

354. On a cocal on "Pine Ridge" soil in Stann Creek Valley, the stunted 5-year-old trees have had three fertiliser applications in the past 18 months. The trees are still not showing normal growth but there is a significant increase in the growth rate of those getting phosphate. There is probably some advantage in the use of Potash with the Phosphate but, in this trial, as was the case at Hector Creek in 1954, there is no response to Nitrogen. Both trials are being continued.

355. (*B*) *Natural Savannah Pasture*: In May 1954, a series of fertiliser plots were established on the natural pastures of lower Baking Pot to give some indications of:

(*a*) the dry-matter production of these "low bits" grasslands,
(*b*) the response to fertiliser dressings,
(*c*) the composition of the sward.

356. (*a*) *Dry Matter Production*. The averages in lb./acre from paired cages clipped at monthly intervals are shown below:—

MONTH	Treatment. No. Fertilizer	Phosphate	Double Phosphate	Nitrogen	Nitrogen and Phosphate
January 1955 only	913	938	1,285	1,140	1,076
February 1955	277	703	259	326	286
March 1955	8	46	26	16	11
April 1955	Nil	Nil	Nil	Nil	Nil
May 1955	Nil	Nil	Nil	Nil	Nil
June 1954 & 1955	1,780	1,904	2,707	1,806	2,774
July 1954 & 1955	1,384	1,481	1,057	1,293	1,375
August 1954 & 1955	1,264	1,176	1,147	900	1,153
September 1954 & 1955	852	1,500	1,148	1,086	1,055
October 1954 & 1955	855	1,199	2,228	947	1,394
November 1954 & 1955	761	320	1,364	1,053	473
December 1954 & 1955	354	300	360	353	294
Yearly Total	8,468	9,567	11,581	8,920	9,891
% Yield June—November ..	81.7	79.3	83.4	79.5	83.2
% Yield December—May ..	18.3	20.7	16.6	20.5	16.8

Plots were ¼ acre with wire cages 10'x3'x2' which were laid down after each clipping on freshly-clipped, randomly-selected sites within the plot. The field was periodically grazed by the beef herd, and bushed mechanically when required.

357. (*b*) *Response to fertiliser dressings.* Nitrogen was applied as 100 lb./ac. Sulphate of Ammonia in May and November. Phosphate as 100 lb./ac. Triple Phosphate in May and the double Phosphate plots received an additional 100 lb./ac. in November.

358. The figures indicate fairly clearly that the savannahs are in general low-producing, even with the use of Phosphate, and that there is no response to Nitrogen as is elicited with pastures of improved grasses. They also show that only 1/5 of the total production occurs in the six months December—May, *i.e.* without dry season supplementary feed or conservation of the June—October flush as silage, the annual carrying capacity cannot be greater than 1 cattle beast to 3 acres. Peak production in both 1954 and 1955 occurred in June and no growth at all was recorded for April and May in 1955.

359. (*c*) *Botanical Composition.* Records were kept of the grass and weed species occurring throughout the year. The principal grasses were *Axonopus compressus*, *Cynodon dactylon* and *Paspalum centrale* and the main weeds were *chichibe* (*Sida acuts*), composites and *Nimosa pudica.* A noticeable feature of the dry season was the rapid disappearance of Axonopus from the pastures and its replacement by *Paspalum centrale* and composite weeds.

360. *Froghopper Control.* Mr. H. Turner of Estrella submitted figures of his own observations in his cane fields during May—July, 1954. He used "Agrocide 3" (0.65%—BHC) at 30 lb./acre, and his results are summarised as follows:—

1. The Agrocide treatment produced a rapid decrease in insect numbers, giving in most cases a 100% kill in 3—4 days.
2. With applications in June and July, 1—2% of the original infestation reappears in October.
3. Where no Agrocide was used there was also a normal, rapid decline of infestation in October.

361. Whilst cane production methods remain comparatively primitive there is no doubt that other factors such as the quality of the planting material, the age of the ratoon crops, the variety and weed control are of much greater importance than froghopper control.

362. *Stock feeding.* (*A*) *Poultry.* In 1954, the Department cooperated with a farmer in an Indian village and built a prototype laying house of wire and bush materials. In addition to setting an example of better husbandry in the village, the unit provided data on the laying performance of mature, local crossbred stock. It was divided into three houses of 30 birds *House A* birds got 2¼ oz. maize, 1½ oz. greens, grit, salt and water *ad lib* —a typical local feeding

practice. *Houses B and C* were similar except that in *B* 1 lb. of maize each day was replaced by 9½ oz. of locally-grown peanuts and in *House C*, the 1 lb. of maize was replaced by 2 1/5 oz. of 72% protein livermeal. Those rations, were of similar TDN intake.

363. A summary of results after 52 weeks was as follows:—

	Maize	*Maize plus peanuts*	*Maize plus livermeal*
No. of Birds.			
(*a*) 1st 15 weeks	25	25	25
(*b*) 2nd 37 weeks	30	30	30
Total Feed Cost per Year	$43.65	$75.25	$38.36
Total Eggs	1,561	1,921	2,256
Eggs per Bird	53	66	77
Feed cost per egg	2.79¢	3.91¢	1.70¢
Gross Egg Sales	$93.60	$115.20	$135.36
Feed Cost as % of Gross Income	46.6%	65.3%	28.3%
Egg Wt. (Oz. per doz.)	22.10	22.16	22.95
Broody Bird Index *	4.5	4.6	7.4

*Broody Bird Days. / Total Bird Days. x100.

364. The obvious facts which emerge from this study are:—

1. The low production per bird in all groups.
2. The effectiveness of the livermeal in raising production. In this study only 57 lb. of livermeal, worth $7.19 was sufficient for 30 birds for a year and it allowed a saving of 365 lb. of maize worth $10.95.
3. The maize sparing effect of the livermeal.

365. In this particular study, the saving in maize represented a 22 months ration of maize for every 100 birds kept, in a region where corn land is rapidly being lost to sugarcane. As a result of this trial the Government is proceeding with an order for a quantity of livermeal for farmers' use.

366. (*B*) *Pigs.* In March 1955, a small group feeding trial was commenced to assess the value of livermeal as a supplement to the local all-vegetable ration. Eighteen crossbred Hampshire and Berkshire mixed sex pigs approximately 9 weeks old were placed in two randomised groups and fed a ration of maize, bananas, grass, sweet potato vine and minerals. One pen received in addition 2 oz. per head daily of 72% protein livermeal. 1 lb. of whole maize was taken as the meal unit and the equivalent in other feeds was as follows:—

		Cost per Meal Unit (c)
Plantain or Banana (boiled)	4 lb.	8
Sweet Potato Vine (chopped)	5 lb.	5
Grass (*Ixophorus unisetus*) chopped	5 lb.	5
Livermeal	¼ lb.	3.1

367. Results were as follows:—

	Control Group	*Livermeal Group*
No. of Pigs	9	9
Duration of Trial	100 days	100 days
Initial Liveweight	27.7 lb.	25.6 lb.
Final Liveweight	64.3 lb.	88.7 lb.
Average Weekly Gain	2.56 lb.	4.41 lb.
Crude Protein %, mixed feed	8.1	10.8
Meal Units per lb. of liveweight increase:—		
1—30 days	4.91	4.19
31—60 days	5.75	3.16
61—100 days	6.59	2.88

368. There is evidence from the Department's piggery at Central Farm to show that half-bred pigs provided with either meat meal or skim milk are capable of weight gains of 2 lb. per day in the 40—80 lb. live-weight range.

369. *Cotton.* The plots established in November 1954 were only fair at the time of compiling the 1954 Report but by March 1955 they had all made excellent growth and results were encouraging: Yields were as follows:—

Variety	*Origin*	*Plot Size (ac)*	*Seed Cotton per ac (lb)*	*Stainer Damage*	*% at 1st picking*
U.K. 51	Africa ..	0.18	1,670	5.1	54.3
9L34	Africa ..	0.13	1,698	5.7	71.3
26C	Africa ..	0.18	943	6.0	45.9
C50/20	Africa ..	0.20	1,683	6.7	55.1
Coker Wilds U.S.A.		0.21	1,680	17.7	40.3

370. Data in relation to bolling was as follows:—

BOLLS PICKED PER PLANT.

Variety	*Mean*	*St. Deviation*	*Std. Error*	*Significance*
Coker Wilds	12.6	+3.6	0.66	—
U.K. 51	26.1	+11.9	2.17	++
9L34	27.5	+11.6	2.12	++
C50/20	21.4	+7.8	1.42	++
26C	15.4	+6.4	1.17	NS

++ significantly greater no. of bolls (p=0.01) than the American variety.
NS= not significant.

371. A spinner's report on samples sent to U.K. was as follows:—

Test Results	VARIETY			
	9L34	C50/20	*Coker Wilds*	*Deltapine (U.S.)*
Length				
(*a*) mean fibre length (inches) ..	1.18	1.25	1.26	1.18
(*b*) Effective length (inches) ..	1 8/32	1 12/32	1 13/32	1 9/32
Fineness				
Hair weight in milligrams /cm ..	0.00139	0.00139	0.00153	0.00152
Maturity				
Dead fibres %	30.4	28.7	31.6	33.3
Strength				
Pressley Index Lb/Mgm.	8.37	8.82	8.60	7.80

372. *Ramie Variety Trials.* Ramie is primarily a fibre crop and has been bred for long stems and relatively little leaf at maturity. At the same time the leaves and young stems have a high protein content which makes it a valuable fodder crop, and as a source of greens for pigs it has proved very promising. In 1955, 15 selections of Japanese and Florida origin were transferred to Central Farm from the defunct Barton Ramie Estate and maintained for observation as likely feeding varieties with particular reference to (*a*) absence of leaf scald,
(*b*) leafiness,
(*c*) recovery from rutting,
(*d*) minimum of hairiness and
(*e*) resistence to torticid leaf roller.

373. The locally-selected white-stemmed variety suffers badly from leaf scald and so also did the U.S. selections E49-71 and Texas Americana. The most promising varieties in all respects were Rosario, E51-79, and Tatusuyama No. 3, and the first of these is being bulked for further observations of its feeding qualities. The varieties E50-89, Tatusuyama No. 1 were much too stalky to be of value as a stock feed.

374. *Sugar Cane Variety Trial, Louisville.* Cane was planted September 1952, in rows 5 apart with 2' between stools. No fertiliser was used. Originally laid out as 7x7 Latin Square

with 1/50 acre plots, but only two rows harvested, as replicated block, because of flood damage to lower part of experimental area.

375. Results of 1955 harvest:—

Variety	*wt. of cane/plot (lb.)*			*Tons/acre*		
	Repl. 1	*Repl.* 2	*Mean+S.D.*	1955	1954	+
POJ. 2878	628	954	791+230	17.5	25.0	25.0
B.41227	674	1,357	1,016+480	22.6	25.5	32.1
B.4098	1,038	835	937+142	20.8	37.8	29.5
B.37161	1,028	651	840+270	18.6	27.1	26.4
B.3337	982	806	894+122	19.8	22.2	28.1
B.34104	720	332	526+276	11.6	14.5	16.5
B.41211	665	400	533+185	11.8	15.0	16.7
Mean	819	762	791	17.5	23.9	

+1955 figures adjusted to a value relative to 25.0 tons/ac.
POJ. 2878 comparison with 1954.

376. *Mean refractometer value % cane with stem borer.*

Variety	1955	1954	1955	1954
POJ.2878	23	22	3	8
B.41227	22	23	15	21
B.4098	18	19	5	18
B.27161	22	20	7	12
B.3337	21	22	13	11
B.34104	22	21	14	10
B.41211	21	20	10	22
Mean	21.3	21.0	9.4	14.5

	Harvest date	*Mean refract value*	*% stem borer*
Replicate 1	3/3/55	21.2	8
Replicate 2	4/4/55	21.4	14

377. Notes:— (1) The large standard deviations—occasioned by there being only two replicates—prevent any statistical significance.
(2) No variety has yielded significantly better than POJ. 2878 but B.41227 and B.4098 appear to be worth continued trial.
(3) B.4098 appears to have a good resistance to stem borer attack, but in both years it has shown a slightly low refractometer reading.
(4) The difference in harvesting date for the two replicates seems to have had little effect on mean yield or refractometer value, but there may have been an increase in stem borer attack by the time of harvest of replicate 2.
(5) Probably the most striking thing is the resistance of POJ.2878 to *Diatraea sacchoralis*.

378. *Sugar Cane Fertiliser Trials, Corozal Districts.* In 1954, it was shown quite clearly, that the yield of cane frown on the Louisville Black Clay Soils could be substantially raised by the use of Phosphate together with Sulphate of Ammonia. In 1954 a series of plots were laid down covering as wide a range of soils as possible to try and find out whether the results gained at Estrella were applicable to the sugar-growing area as a whole.

379. Each farmers' trial consisted of six plots, each one half a task in area. Two with no fertiliser, two with Nitrogen only and two with Nitrogen and Phosphate. The fertiliser was applied at the rate of 112 lb./ac. with the Nitrogen in two applications of 56 lb. Wherever possible, the fields treated were 1st. year ratoon cane.

380. *Results.* A summary of the results grouped according to soil type are shown in the accompanying table representing thirty-two different farms. It will be noted that in every case it paid to use Phosphate with Sulphate of Ammonia. The response to fertiliser was greatest on the grey soils, but in general it can safely be recommended that if the cane farmer were to adopt a practice of applying both Nitrogen and Phosphate to second-year and third-year cane, he could raise his cane yield by 4-10 tons/ac.

SUMMARY OF TRIAL RESULTS.

	BLACK CLAY SOILS			BROWN SOILS			BROWN STONY SOILS			GREY SOILS		
No. of Farms	20			6			4			2		
Treatment	*No. Fert*	*N. only*	*N+P*	*No. Fert*	*N. only*	*N+P*	*No. Fert*	*N. only*	*N+P*	*No. Fert*	*N. only*	*N+P*
Tons of Cane/Ac. ..	17·3	19.5	21.7	15.7	17.4	20.1	25.1	26.6	30.4	12.9	19.0	23.4
Standard Error (Tons) ..	0.94	1.38	0.99	2.38	2.56	2.84	4.4	4.16	4.4	2.36	3.96	2.38
Value of the Increased Yield of Cane ($) ..	—	17.87	34.80	—	13.48	34.34	—	11.52	40.85	—	47.43	81.93
Estimated Cost of Fertiliser & Spreading	—	8.55	17.66	—	8.55	17.66	—	8.55	17.66	—	8.55	17.76
Net Increase Per acre ($)	—	9.32	17.14	—	4.93	16.68	—	2.97	23.19	—	38.88	64.27

APPENDIX I

SUMMARY OF RAINFALL FOR 1955

BRITISH HONDURAS.

TABLE I

DISTRICTS AND STATIONS	MONTH												TOTAL	TOTAL	AVERAGE
	January	February	March	April	May	June	July	August	September	October	November	December	1955	1954	10 Yrs.
COROZAL															
1. Corozal Town	1.67	2.56	.26	0	0	1.25	8.30	5.69	4.41	11.48	4.30	2.25	41.57	64.88	52.55
2. Corozal Agstat	1.53	2.47	.15	0	0	1.28	10.04	8.30	6.92	9.98	4.13	2.34	47.11	75.64	55.38
3. Louisville	.76	4.61	.17	0	0	3.98	10.35	9.17	11.70	13.82	8.16	3.73	66.45	61.31	
4. Pembroke Hall	.77	3.73	.02	0	0	3.09	10.06	7.27	—	—	5.51	3.51	—	65.68	
ORANGE WALK—															
5. Orange Walk Town	1.22	1.83	.05	0	.62	3.63	12.72	4.79	3.26	8.77	7.09	5.28	49.26	85.04	59.63 (C)
6. Gallon Jug	2.51	2.22	1.05	0	.16	7.91	20.60	6.24	9.15	14.31	5.55	2.71	72.41	76.80	58.73 (A)
7. Fresh Water Creek	3.44	3.89	0	0	0	5.65	20.53	4.13	13.49	15.67	9.67	9.08	85.55	108.43	81.39 (C)
8. August Pine Ridge	1.00	2.53	0	0	0	3.27	10.84	9.86	6.72	20.35	6.20	1.59	62.36	82.20	
BELIZE—															
9. San Pedro	1.47	2.33	.08	.04	0	2.87	4.01	8.24	—	—	—	—	—	49.97	
10. Half Moon Caye	1.83	3.25	.96	.10	.15	.95	3.04	5.42	4.77	9.78	5.02	7.92	43.19	53.77	
11. Maskalls	2.86	2.49	.04	0	0	1.46	9.39	8.32	14.17	19.24	8.18	6.45	72.60	81.36	
12. Luckystrike	4.38	3.11	.70	.03	0	2.61	5.05	5.16	8.56	20.70	11.27	1.61	63.18	82.69	
13. Salt Creek	2.73	3.55	2.05	.10	.50	7.10	9.96	5.20	8.89	21.91	6.77	6.10	74.86	64.54	
14. Stanley Field	3.56	4.19	1.11	0	.21	9.90	8.46	7.76	9.39	24.91	9.34	4.15	82.98	76.08	
15. Belize	2.28	7.26	1.72	0	.48	8.53	7.73	8.67	11.72	26.90	13.48	7.61	96.38	72.80	67.94
16. Gracie Rock	2.28	3.87	1.08	.01	.18	4.20	18.79	7.69	10.98	24.83	10.91	7.49	92.31	80.80	
17. Glenville	1.44	.92	0	0	0	7.74	24.83	12.06	8.94	21.23	5.46	6.96	89.58	85.07	
18. Boom	3.56	2.74	.83	.01	.02	4.59	10.69	6.48	7.31	22.07	8.79	5.86	72.95	—	
CAYO—															
19. Benque Viejo	2.59	2.37	1.48	0	0	3.28	13.35	4.67	1.92	13.09	6.01	2.52	51.28	53.07	
20. Cayo Town	2.76	2.04	1.13	0	0	3.98	11.10	1.53	7.19	12.15	6.00	3.72	51.60	54.95	
21. Listowel	1.80	2.08	1.31	0	0	4.27	19.27	3.22	5.27	13.46	6.24	3.10	60.02	69.65	58.42 (C)
22. Central Farm	1.83	2.65	.85	0	.02	4.10	19.81	3.76	5.72	14.04	6.89	3.96	63.63	68.14	52.58 (B)
23. Augustine	1.73	3.67	.38	.07	1.84	1.90	9.23	7.20	6.49	17.24	6.92	3.86	60.53	78.49	56.73 (B)
24. Roaring Creek	2.10	3.99	1.53	.06	.08	5.92	29.54	5.64	5.32	23.08	7.70	7.40	92.36	86.50	
25. Norland	2.04	2.80	1.17	0	0	4.56	19.95	3.65	6.42	14.41	7.14	5.43	67.57	75.38	

TABLE I. (*Continued*)

DISTRICTS AND STATIONS	MONTH												TOTAL	TOTAL	AVERAGE
	January	February	March	April	May	June	July	August	September	October	November	December	1955	1954	10 Yrs.
STANN CREEK—															
26. Stann Creek Town	1.49	4.28	.21	.12	0	3.41	9.94	5.83	6.56	13.88	6.70	—	—	59.53	
27. Melinda Farm	1.04	5.12	2 08	0	.09	5.89	17.02	10.81	10.88	30.98	14.12	9.66	107.69	97.31	88.33 (C)
28. Stann Creek Agricultural Station	1.49	4.28	1.91	0	.44	5.00	20.46	11.93	8.96	27.39	11.76	8.13	101.75	92.07	80.54
29. Pomona	1.85	4.89	1.62	0	.59	4.38	23.68	15.61	7.88	31.64	13.73	9.03	114.90	100.25	
30. False Creek	2.89	3.95	1.68	.07	.06	4.83	26.33	13.78	10.42	28.56	11.87	11.67	116.11	112.82	100.50 (C)
31. Cow Creek	2.75	3.88	1.65	0	.45	4.20	30.02	13.55	12.78	30.01	13.06	9.99	122.34	127.19	107.31 (C)
32. New Farm	3.17	4.26	2.01	0	.51	6.79	32.20	15.05	14.08	31.49	13.68	10.55	113.79	136.56	
33. Alta Vista	2.95	3.93	1.59	.10	.15	3.79	26.29	15.14	10.66	29.34	13.06	10.60	117.60	106.73	
Tipperary	2.22	5.08	1.76	.13	.13	4.55	19.81	Recording closed		—	—	—	—	113.06	
Unity Farm	2.24	5.08	1.83	.13	.13	4.57	Recording closed			—	—	—	—	113.01	
34. Middlesex	2.55	4.78	1.25	.20	.13	5.01	34.59	13.92	9.03	29.00	11.62	9.16	121.24	108.54	104.68
35. Mango Creek	3.25	4.19	5.50	.14	.32	3.76	25.59	10.04	17.74	20.02	2.93	9.64	103.12	94.70	
36. Sittee River	1.93	3.79	1.45	.22	.27	3.73	24.04	9.08	9.21	29.92	5.16	8.07	96.87	—	
TOLEDO—															
37. San Antonio	1.82	6.93	.79	.23	.50	9.43	35.56	14.65	10.51	15.42	10.25	4.68	110.77	100.78	
38. Punta Gorda Agricultural Station	2.81	6.07	2.72	.58	.45	14.20	37.42	17.79	15.59	20.64	10.83	8.87	137.97	130.37	148.22
39. Hunting Caye	1.97	17.85	2.06	0	1.30	5.82	15.15	7.41	15.69	40.04	14.68	23.53	145.50	137.18	
40. Punta Gorda Town	3.60	5.35	5.29	.64	1.86	15.17	29.63	18.16	15.08	15.50	18.83	8.18	137.29	125.66	159.01
41. Barranco	3.63	4.16	4.99	.74	2.91	19.92	32.86	21.14	20.27	26.96	16.32	3.43	157.33	183.46	
42. Crique Sarco	2.79	4.46	3.96	.04	8.87	14.86	42.76	12.97	11.81	17.77	13.34	5.86	139.49		

NOTE:—A=8 Yrs. B=7 Yrs. C=5 Yrs. — = No Record 0=Nil

TABLE II

MONTH	PRESSURE		TEMPERATURE								HUMIDITY		
	MEAN BAROMETRIC PRESSURE		MEAN MONTHLY MAXIMUM				MEAN MONTHLY MINIMUM				MEAN MONTHLY RELATIVE HUMIDITY		
	Belize	*Stann Creek*	*Belize*	*Stann Creek*	*Toledo*	*Central Farm*	*Belize*	*Stann Creek*	*Toledo*	*Central Farm*	*Belize*	*Stann Creek*	*Toledo*
January	30.061	30.010	75.3	82	79	78	73	63	61	—	90.15%	77%	79
February	30.033	30.005	77.0	81	79	80	71	63	63	—	89.82	76	86
March	30.013	29.879	87.0	86	82	85	75	68	65	—	87.42	65	70
April	29.906	29.950	81.6	83	82	90	76	68	66	—	87.46	70	70
May	29.856	29.912	83.3	88	94	90	77	69	67	—	85.84	61	83
June	29.928	29.870	83.0	88	88	95	77	72	67	—	87.00	65	74
July	29.955	29.894	86.0	83	84	—	75	73	70	—	91.00	79	81
August	29.952	29.864	88.9	87	86	—	76	72	72	—	90.90	74	73
September	29.819	29.809	88.8	86	87	—	74	73	71	80	92.70	74	74
October	29.896	29.870	83.3	84	85	—	76	71	73	77	93.20	78	84
November	29.982	29.935	82.8	82	83	—	71	69	68	76	94.30	78	84
December	30.040	29.993	80.5	81	80	—	68	67	66	73	92.80	79	86

APPENDIX II.

AGRICULTURAL COMMODITY IMPORTS 1954 AND 1955.

CUSTOMS DEPARTMENT FIGURES.

Commodity	*Unit*	1954 *Quantity*	1954 *Value*	1955 (*Provisional*) *Quantity*	1955 (*Provisional*) *Value*
			$		$
Cattle for Breeding	No.	54	30,216	40	14,382
Cattle for Slaughter	No.	—	—	13	1,339
Poultry for Breeding	No.	7,246	2,452	6,764	1,662
Swine for Breeding	No.	9	921	—	—
Biscuits— Sweet	x 100 lb.	495	25,526	689	34,213
Unsweetened	x 100 lb.	323	16,064	476	21,892
Butter	x 100 lb.	1,530	123,807	1,944	157,901
Butter Substitutes	x 100 lb.	3,984	121,843	3,611	105,267
Cheese	x 100 lb.	1,646	91,437	2,381	127,750
Cocoa, prepared	x 100 lb.	383	29,553	484	37,023
Coffee— ground	x 100 lb.	194	26,332	293	44,489
substitutes	x 100 lb.	54	14,193	1	74
Eggs, fresh	doz.	9,756	7,609	22,013	16,375
Fish, canned	x 100 lb.	761	30,058	937	36,229
Rice	x 100 lb.	36,642	423,811	26,640	179,167
Flour	x 100 lb.	87,758	605,150	111,601	727,836
Dried Beans, Red Kidney	x 100 lb.	966	17,408	1,026	22,186
Other Kinds	x 100 lb.	1,164	18,337	1,561	23,700
Lard & Substitutes	x 100 lb.	8,718	269,166	9,366	230,690
Beef in barrels	x 100 lb.	1,459	55,975	1,649	52,655
Pork in barrels	x 100 lb.	1,980	56,348	1,926	64,302
Pork mess	lb.	200	75	—	—
Canned meat	x 100 lb.	1,762	96,819	2,771	141,627
Hams & Bacon	x 100 lb.	340	28,611	652	54,700
Milk— Condensed	x 100 lb.	20,872	440,743	22,163	499,977
Unsweetened	x 100 lb.	4,193	104,296	11,089	212,169
Powdered	x 100 lb.	1,138	37,321	3,799	137,197
Sugar—Refined	x 100 lb.	12,193	105,758	9,643	65,845
Spices	x 100 lb.	139	12,307	236	18,390
Vegetables— Onions	x 100 lb.	4,585	34,224	4,966	40,260
Potatoes	x 100 lb.	7,431	48,563	10,312	69,778
Garlic	x 100 lb.	164	5,136	183	4,195
Other fresh	x 100 lb.	878	10,541	1,094	16,767
Canned	x 100 lb.	1,108	25,434	1,702	39,782
Tobacco— Manufactured Blackleaf	lb.	31,340	24,407	39,427	32,665
Unmanufactured, other	lb.	74,092	65,890	54,166	54,538
Cigarettes	lb.	41,249	100,039	60,952	147,170

AGRICULTURAL COMMODITY EXPORTS 1954 AND 1955.

CUSTOMS DEPARTMENT FIGURES.

Commodity	*Unit*	1954 *Quantity*	1954 *Value* $	1955 *Quantity*	1955 *Value* $
Bananas	Bunches	985	513	20,873	33,930
Plantains	Bunches	1,477	386	49	22
Citrus—Grapefruit fresh	x 100 lb.	24,474	106,024	29,495	117,172
Grapefruit juice	x 100 lb.	29,942	273,888	31,557	289,989
Grapefruit, segments	x 100 lb.	42,259	552,212	35,223	441,507
Grapefruit, Concentrate	x 100 lb.	1,649	39,215	395	9,046
Grapefruit, oil	x 100 lb.	62	12,456	74	12,280
Oranges, fresh	x 100 lb.	4,378	3,954	153	295
Orange, Concentrate	x 100 lb.	778	32,005	45	1,350
Orange, juice	x 100 lb.	9,491	91,032	8,133	75,637
Orange, oil	x 100 lb.	49	4,691	95	6,128
Pineapple, Canned	x 100 lb.	1,182	20,396	379	8,588
Other fresh fruit	x 100 lb.	137	295	86	295
Fruit Pulp	x 100 lb.	—	—	617	3,970
Dried Beans-Red Kidney	x 100 lb.	46	644	1,353	24,367
Vegetables other	x 100 lv.	57	308	5	20
Spices, Annatto	x 100 lb.	8	157	—	—
Maize	x 100 lb.	26,585	104,055	9,271	36,452
Sugar, unrefined	x 100 lb.	20,258	145,332	46,567	333,751
Eggs fresh	Doz.	381	164	67	41
Coconuts	x 100 nuts	20,809	118,110	18,248	96,252
Copra	x 100 lb.	3,972	53,153	1,917	16,975
Cohune—Kernels	x 100 lb.	3,097	38,198	5,378	48,353
Ramie, fibre	x 100 lb.	64	2,523	382	10,283
Tanning extracts, prepared	x 100 lb.	1,976	8,586	1,960	5,155
Alligator skins	lb.	5,302	15,498	13,681	34,562
Fish— fresh	lb.	67,712	17,434	25,985	4,782
dried	lb.	75,927	17,385	33,369	7,318
Lobsters— whole	lb.	97,941	31,231	60,865	16,610
tails	lb.	94,246	75,057	80,595	74,166
Conch	lb.	3,930	503	24,578	3,862
Tortoise shell	lb.	663	1,261	1,367	2,956
Shrimps	lb.	3,475	1,918	—	—
Forest exports total					$5,240,553

APPENDIX III

LIVESTOCK—SLAUGHTER HOUSE RETURNS, 1955.

Slaughter House	CATTLE		SWINE		SHEEP		GOATS	
	No.	*Total Carcase Weight (lb.)*	*No.*	*Total Carcase weight (lb.)*	*No.*	*Total Carcase weight (lb.)*	*No.*	*Total Carcase weight (lb.)*
Cayo	257	47,510	631	40,503	31	1,134	—	—
Benque Viejo	90	18,433	208	16,387	18	568	1	10
Belize	3,017	654,242	5,410	257,809	206	5,362	16	463
Stann Creek	100	27,333	108	8,974	15	513	—	—
Punta Gorda	31	6,641	201	11,589	—	—	1	21
Sub. Total	3,495	754,159	6,558	335,262	270	7,577	18	494
Orange Walk	124	N.R.	527	N.R.	3	N.R.	1	N.R.
Corozal	32	N.R.	162	N.R.	—	N.R.	—	—
Total	3,651		7,247		273		19	
Compare previous Totals 1954 excluding Orange Walk and Corozal	3,036	691,397	6,696	387,592	203	6,240	16	482

APPENDIX IV

IMPORT OF LIVESTOCK, 1955.

POULTRY				CATTLE			HORSEKIND		OTHERS	
Day old Chicks	*Day old Poults*	*Geese*	*Ducks*	*Bulls*	*Heifers*	*Bull Calves*	*Jack Donkey*	*Stallion*	*Dogs*	*Pigs*
2,100	225	—	—	16	15	1	1	—	5	6

APPENDIX V

STAFF LIST AT 31ST DECEMBER, 1955

Post	*Name*	*Station*	*Remarks*
Director of Agriculture	J. W. D. GOODBAN	Headquarters	
Senior Agricultural Officer	(G. B. GREGORY)	Headquarters	Transferred Fiji 16.8.55
Agricultural Officers	(C. M. GRIEVE)	Stann Creek	On leave from 7.5.55 Resigned 9.9.55.
	S. J. A. WILLIAMS	Orange Walk	
	M. K. CHOPIN	Punta Gorda	Appointed 8.1.55
Agricultural Education Officer	C. A. S. HYNAM	Central Farm	On leave from 29.8.55 Scheme D1808
Land Clearing Engineer	J. B. HUTCHINSON	Central Farm	Scheme D1868
Tobacco Officer	C. L. WANROOY	Orange Walk	Scheme D2117
Veterinary Officer	J. H. ROBINS	Belize	Arrived 24.8.55
Farm Manager	R. COE	Central Farm	Resigned 3.6.55 Scheme D1807
	I. S. HAZELL	Central Farm	Arrived 19.12.55 Scheme D1807
Experimental Officer	V. E. VIAL	Central Farm	Scheme R473A & D807A
Livestock Officer	S. S. DALE	Central Farm	Returned from leave 22.2.55 Scheme D1236
Rice Officer	S. R. MORRISON	Mussel Creek	Scheme D2124
Agricultural Chemist	D. H. Romney	Central Farm	Arrived 14.6.55 Scheme R 604
Cacao Officer	G. LAGRENADE	Stann Creek	Arrived 19.12.55 Scheme D2490
Assistant Agricultural Officer	F. F. ORIO, Jr.	Stann Creek	
	E. G. RUSSELL	—	On 3 years study leave from 1.8.53.
Senior Farm Demonstrators	F. F. ORIO, Sr.	Orange Walk	
	P. B. LIZARRAGA	Corozal	Returned from leave 16.1.55
Farm Demonstrators Grade I	C. D. W. ATKINS	Mussel Creek	
	H. S. NELSON	Belize	On leave from 11.5.55 to 11.11.55
	J. A. LIZAMA	Louisville	At E.C.F.I. Trinidad (W.I. Training course) from 14.6.55.
	J. A. SWASEY	Stann Creek	
	I. S. STEPHENSON	Placencia—Grace Bank	
Farm Demonstrators Grade II	T. L. BRACKETT	Stann Creek	On leave from 15.4.55 to 13.6.55

APPENDIX V (*Continued*)

Post	*Name*	*Station*	*Remarks*
	W. A. GRANT	Belize	
	W. J. Baeza	Central Farm	Seconded to Scheme D1236 as Livestock Assistant.
	F. BAUTISTA	Succotz	
	T. RAMOS	Stann Creek	
Senior Mechanic	W. A. SAUNDERS	Central Farm	
Mechanic	Vacant	Central Farm	
Temporary Farm Demonstrators C.D.W. Scheme D1807	N. L. WILLIAMS	Stann Creek	At E.C.F.I. Trinidad (W.I. Training course) from 14.6.55.
	A. THOMPSON	Stann Creek	
	E. BAUTISTA	Carolina	On leave from 1.6.55 to 24.8.55
	A. GENTLE	Dump, Toledo	
	E. O. R. GILL	Lucky Strike	
	J. A. SANTOS	Belize	
	J. CHIEF	Roaring Creek	On leave from 26. 8. 55 to 31.12.55 retired 31.12.55.
	G. L. MARIN	Cayo	
	C. TORRES	Yo Creek	
	G. C. CASTILLO	Dump, Toledo	
	J. GONZALES	Orange Walk	
	W. T. EBANKS	Central Farm	
	L. V. GABOUREL	Cayo	
	A. P. BAUTISTA	Punta Gorda	
	F. B. ARANA	Barranco	
	L. B. FLORES	Orange Walk	
	G. BATTY	Central Farm	
	N. MARIN	Central Farm-Louisville	
	H. WILLIAMS	Iguana Creek	Appointed 1.6.55
Accountant	L. A. ROBATEAU	Headquarters	Seconded from General Clerical Establishment
	B. D. MAHLER	Headquarters	Scheme D1807
Storekeeper Recorders	C. L. WILLIAMS	Punta Gorda	Scheme D1807
	S. B. DANIELS	Central Farm	Scheme D 1807
	F. J. BRADLEY	Stann Creek	Scheme D1807
	Vacant	Orange Walk	Scheme D1807

APPENDIX VI

PLANT AND SEED INTRODUCTION, 1955.

Anona cherimolia	seed	Department of Agriculture, Jamaica
Mangifera indica "East Indian" mango	seed	Department of Agriculture, Jamaica
Guaiacum officinale *Lignum vitae*	seed	Department of Agriculture, Jamaica
CASTOR BEAN:— Dwarf Brazilian Cimarron	seed	Department of Agriculture, Jamaica
MAIZE *Open-pollinated "Amarillo de Cuba".*	seed	Rockefeller Foundation, Mexico, D.F.
MAIZE "C 11" (hybrid) "Francisco" (hybrid)	seed	Cornelli Seed Co., Cuba.
Digitaria decumbens *Pangola grass*	cuttings	Department of Agriculture, Jamaica
BROOMCORN Rennells No. 2 Millers No. 8 Scarborough Dwarf No. 7	seed	Miller Seed Farms, Elk City, Oklahoma, U.S.A.
Pithocolobium Saman	seed	Department of Agriculture, Trinidad
Amherstia nobilis	plants	Department of Agriculture, Trinidad
Indigofera endecaphylla *Indigofera hirsuta* *Centrosema pubescens* *Leucaena glauca*	seed	Department of Agriculture, Fiji
Eugenia malaccensis	seed	Department of Agriculture, Trinidad
Haricot beans	seed	Messrs Sharp, Stann Creek
'White Navy beans "*Comtesse de chambord*" White Dwarf Beans "Michilite Strain"	seed	Citrus Company, Jamaica
White Beans "Dwarf Golden Waxpod" Climbing French Beans "Earliest of All"	seed	Sutton Ltd., Reading, England
Navy Beans "*Michilite*"	seed	Atlas Burpee Company, Philadelphia, U.S.A.
White Beans "Topmost" "Ranger"	seed	Asgrow Export Corporation, Conn., U.S.A.
Haricot Beans "Dwarf French"	seed	Scottish Seed House, Perth, U.K.
COTTON *G. herbaceum* *G. hirsutum* "*Deltapine*" "C50/20"	seed	Imperial College of Tropical Agriculture, Trinidad
COTTON G. *barbadense*		St. Vincent V.135; Montserrat S.I.
COTTON 9L34 UK 51	seed	E.C.G.C. station, Antigua, B.W.I.

CL20 Northern Star Bar 7/8 Coker Wilds Deltapine 15 Stoneville 62 C.50/20 Samrau 25/C VHS. Sea Island Montserrat Sea Island BLR 14/20		
Roses Polyanthus Maman cochet Hibiscus variegatus Hibiscus assorted Begonia Pentas Gerberas Strobilanthes Dyerianus	.. plants	.. Department of Agriculture, Jamaica
Cinnamon	.. plants	.. Department of Agriculture, Grenada
Cloves	.. plants	.. Department of Agriculture, Grenada
AVOCADO PEARS Pollack Simmons Lula Simpson	.. plants	.. Republic of Honduras
Cocoa	.. seed	.. Cocoa Board, Trinidad
Sabinea carinalis "Carib Wood	.. seed	.. Subtropical Experimental Station, Homestead, Florida, U.S.A.
Pineapple "Pernambuco"	.. suckers	.. Florida, U.S.A.
Ischaemum aristatum *Ischaemum* (Toco grass) *Ischaemum timorense* *Ischaemum* (*Lucuntu* grass)	.. cuttings	.. Department of Agriculture, Trinidad
Soya Bean (Bansei)	.. seed ..	.. A. Burpee Company, Philadelphia, U.S.A.
Garlic (extra select Calif)	.. bulbs	.. A. Burpee Company, Philadelphia, U.S.A.
Cabbage (Chinese)	.. seed ..	.. Estacion Exp. Agricola, Division de fincas
Lettuce (Imperial 44)	..	de semillas, Rio Piedras, Puerto Rico
Papaya (yellow)		
Boehmeria spp. (Ramie) Jesus de Otoro Tatusuyama No. 1 No. 2 No. 3 Rosario E50-13 E51-79 E50-66 E49-71 E50-89 Texas Americana B. utilis	.. roots ..	.. C.D.C. project, Barton Ramie
Boehmeria spp. (Ramie) B.utilis, P.1.205502 Murakami P.1. 205492 Local white-stemmed.		

FINANCIAL STATEMENT 1955.

EXPENDITURE.

Head 3 Agriculture.

Subhead 1	—Personal Emoluments	$49,640
2	—Travelling and Subsistence	3,427
3	—Transport Allowances	1,202
4	—Running and Maintenance Costs of Vehicles	4,008
5	—Revenue Producing Operations	11,612
6	—Running Expenses, Agricultural Stations	25,474
7	—Agricultural Extension Work	1,153
8	—Veterinary Services	2,064
9	—Control of Pests and Diseases	2,248
10	—Housing Rentals	1,187
11	—Implements and Tools	295
12	—Visits of Specialists	39
13	—Upkeep of Temporary Buildings	899
14	—Raincoats, Boots and Bags for Field Staff	348
15	—Boat and Doreys	307
16	—Upkeep of Farm Equipment	237
17	—Freight on Plants etc.	82
18	—Scientific Equipment	16
19	—Stationery and Incidentals	497
20	—Maintenance of Central Farm	7,937
21	—Mechanical Equipment for Central Farm	886
	Total Expenditure	$113,558

Colonial Development and Welfare Schemes:

D.981G—Completion of Central Farm (Electricity)	$1,860
D. 981H—Completion of Central Farm (Water Supply)	3,436
D.981I—Completion of Central Farm (Labourers' Houses)	4,133
D.1108 (318)— Training of Messrs C. D. W. Atkins and H. S. Nelson	16
(377) —Training of Mr. J. A. Lizama	531
(378) —Training of Mr. N. L. Williams	531
D.1236— Livestock Officer	6,042
D.1366— Minor Economic Scheme (Animal Disease Survey)	1,297
D.1807— Staff for Agricultural Department	29,437
D.1808— Agricultural Education	9,114
D.1816 & A—Quarters for Farm Demonstrators	680
D.1819— Scatter Plot Trials etc.	15,692
D.1824— District Agricultural Stations	18,843
D.1868— Land Clearing Scheme	53,577
D.1914— Livestock Scheme	38,560
D.2117— Tobacco Scheme	22,554
D.2124— Rice Officer	30,574
D.2368 —Rice Investigation Scheme	110,162
D.2376 —Soil Conservation Demonstration, San Antonio	1,999
D.2446— Agricultural Staff and Buildings	19,158
D.2490— Cacao Scheme	10,835
R.473A & D.1807A—Experimental Officer	6,344
R.604— Agricultural Chemist	4,335
	$389,710

APPENDIX VIII

DISTRIBUTION OF VEGETABLE SEEDS FROM CENTRAL FARM, 1955

Variety	*Packets sold*	*Packets sent North for free distribution after September 27th*
CABBAGE, Steins Flat Dutch, Early Jersey	2,118	779
TOMATO, Marglobe	1,516	512
BEANS (POLE), Kentucky Wonder	195	—
BEETROOT, Detroit Dark Red	161	92
RADISH, Crimson Giant	612	215
LETTUCE, Grand Rapids	498	175
CARROT, Chantenay	413	98
TURNIP (Snowball)	142	—
CAULIFLOWER, Suttons Early Patna	605	—
KOHL RABI, Early Vienna	163	124
EGG PLANT, Black Beauty	281	41
CUCUMBER, Diamond	243	—
MELON (MUSK), Imperial, Honeydew	99	—
MELON (WATER) Tom Watson	703	—
ONION, Yellow Bermuda	421	282
PEPPER (SWEET), California Wonder	373	328
OKRA, Clemson Spineless	28	23
PUMPKIN, Golden Cushaw	97	34
SQUASH, Table Queen	17	8
SOYA BEANS, Bansei	120 lb.	—
LEEK, Large American Flag	68	—
	8,753	2,711

APPENDIX IX

PRODUCTION RECORDS. CENTRAL FARM DAIRY HERD, 1955.

Name	*Breed*	*Milk Yield (lb.)*	*No. of Days*	*Milk per day (lb.)*
Darling	Local	2,280	259	11
Ferret	Local	3,884	235	17
Christmas	Local	4,259	233	18
Damsel	Local	4,651	230	20
Annie	Local	4,920	204	24
Cassie	Local	4,980	200	25
Amy	Local	1,413	123	11
Tilda	Local	1,626	102	16
Foxy	Local	3,739	220	17
Isoline	Local	3,389	243	14
Zola	Local	5,592	294	19
Hope	Imported Jersey	1,564	138	11
Patience	Imported Jersey	3,623	313	12
Herd Average:— 13 cows		3,532 lb.,	215 days,	16.5 lb. per day
1954 15 cows				16.1 lb. per day

APPENDIX X

ANALYSIS OF SOME FIGURES FOR MILPAS IN COROZAL DISTRICT 1954.

	Corn		Rice	
		No. readings		*No. readings*
Rent cents/mecate	12.2	11		
Mensuration cents/mecate	10	11		
Wages/man-day	$1.09	9		
Felling cents/mecate	$0.93	11		
Wages/man-day	$1.49	10		
Cost of supervising burning $ per milpa	$2.22	11		
Seed cost/ mecate	$0.09	6	$0.17	4
lbs./mecate	1.7	6	4.1	4
Planting cents/mecate	$0.29	7	$0.55	4
Wages/man-day	$1.16	7	$1.10	4
Weeding cents/mecate	$0.28	6	$0.25	3
Wages/man-day	$0.84	6	$0.68	3
Cost of grain crib	$4.30	5		
Harvesting cents/cargo	$0.49	6	$1.00	4
Cargoes/man-day	2.5	6	1	4
Transport to village cents/mecate	$0.21	10		
To Corozal	$0.23	10		
Shelling or winnowing cents/cargo	$0.36	5	$1.06	4
Yield lb./acre	632	5	1,057	3
Cost of production/100 lbs.	$4.22	5	4.52	3

APPENDIX XI

HOST PARASITE LIST—DECEMBER, 1955.

Note:— Frequency is indicated by one to four plus signs. A minus sign indicates that a specific survey is being made for that parasite with negative findings to date. Where a species is not definitely identified its species name is bracketed.

CATTLE.

Scientific Name	*Frequency*	*Common Name*
PROTOZOA.		
Eimeria spp.	+++	Coccidia
Babesina bigemina	—	Texas fever organism
HELMINTHS.		
Paramphistomum cervi	+	Rumen flukes
Cotylophoron cotylophorum	+	Rumen flukes
Other *trematodes*	—	Rumen flukes
Cysticercus bovis	—	Beef bladder worm
Trichuris (*ovis*)	+	
Oesophagostomum radiatum	+++	Nodule worm
Trichostrongylus spp.	+++	
Ostertagia spp.	+++	
Haemonchus contortus	+++	Barber pole worm suspected
(*Mecistocirrus digitatus*)	+	
Dictyocaulus viviparus	++	
Setaria cervi	+	
ANTHROPODS.		
Dermatobia hominis larvae	++	Beefworm
Cochliomyia hominivorax larvae	++++	Screw worm
Boophilus microplus	++++	Ticks
Amblyomma cajennense	+++	Ticks
Amblymma oblongaguttatum	++	Ticks
Amblyomma Spp.	+	Ticks
Anocentor nitans	+	Ticks

PIGS.

HELMINTHS.

Trematodes	—	Flukes
Cysticerous cellulosae	—	"Pork measles"
Ascaris lumbricoides	+	White worm
Trichinella spiralis	—	
Oesophagostomum dentatum	++++	Nodule worm
Stephanurus dentatus	++++	Kidney worm
(*Necator Suillus*)	+	Hook worm
Trichostrongylus spp.	++	
Hyostrongylus rubidus	+++	Large stomach worm
Metastrongylus pudendotectus	++++	Lung worms
Metastrongylus apri	++++	Lung worms
Macracanthorhynchus hirudinaceus	++	Giant thorny headed worm

ANTHROPODS.

Calliphorine larvae	++	Screw worm
Amblyomma pecarium	+	Ticks
Amblyomma other *spp.*	+	Ticks

HORSE.

PROTOZOA.

Nuttllia equi	+	Tick fever organism

HELMINTHS.

Strongylus spp.	+++	Red worms

ANTHROPOD.

Calliphorine larvae	++	Screw worm
Boophilus microplus	+++	Ticks
Amblyomma cajennense	+++	Ticks
Amblyomma other *spp.*	+	Ticks
Anocentor nitans	+	Ticks
Psoroptes communis equi	++	Psoroptic mange

POULTRY.

HELMINTHS.

Choanotaenia infundibulum	+	Tape worms
Raillietina cesticillus	+	Tape worms
Raillietina (other spp.)	+	Tape worms
Heterakis gallinae	+	
Ascaridia galli	+	

APPENDIX XII

LOCAL WEIGHTS AND MEASURES.

1 quartia=½ almud=2½ quarts
1 almud=5 quarts
1 benequen=15 quarts
1 shushack=4 almuds=20 quarts
1 cargo=60 quarts=12 almuds.

---

1 barrel=110 quarts.

---

300 ears of corn in husk=60 hands
1 hand=5 ears, *i.e.* the number picked up in each hand when counting ears
60 hands=300 ears=(should shell out to) 1 cargo.

---

1 block chicle=1 pesada=1 arroba=25 lb.
4 pesadas or 4 arrobas=100 lb.=1 quintal.

---

1 mecate=1 task—25 yards x 25 yards—approximately one-eighth acre
16 mecates=1 manzana—approximately 2 acres.
(8½ varas plus 1 machete length=1mecate).

---

1 cart-load firewood—300 sticks at 3 ft. long.

---

1 fathom=6 feet—1 brassada
("Brassada" is literally the distance between outstretched arms (brassos)).

CITRUS—
A unit of grapefruit is a 70 lb. box
A unit of oranges is a 90 lb. box
A/2 juice carton contains 24x12 oz. tins
A/10 juice carton contains 6 tins approx. 1 gall. each
404 juice carton contains 12x24 oz. tins.
Barrels contain 43 gallons.

---

4 British Honduras Dollars equal £1 Sterling.
1 British Honduras Dollar equals Five Shillings Sterling.

REVENUE

LOCAL BUDGET

Head 4.	Subhead		
10	Sale of Government Stores		$1,046
25	Receipts from Central Farm		4,388
26	Sale of Produce and Plants, etc. Agricultural Stations..		4,876
27	Fees for Veterinary Officer's Services		43
	Total Revenue		$10,353

COLONIAL DEVELOPMENT AND WELFARE

Scheme	D981G.	Completion of Central Farm (Electricity)	9
	D1819	Scatter Plot Trials, etc.	1,216
	D1824	District Agricultural Stations ..	902
	D1868	Land Clearing	22,089
	D1914	Livestock	2,015
	D2368	Rice Investigation	82
	D2376	Soil Conservation Demonstration, San Antonio	18
			$26,331

Ext Synon

WW Diehl
References to Diseases of Rice
1954

Host List of Rice Diseases

Bull
Imp. Bull

Index Fungi Plant Diseases in U S

Baldacci